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REVISION OF THE *MEXICANA*-GROUP OF THE CYCLOTELINE GENUS *OZODICEROMYIA* BIGOT (DIPTERA: THEREVIDAE)

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Abstract.—The *mexicana*-group of the cycloteline genus *Ozodiceromyia* Bigot (Diptera: Therevidae) is treated. The two previously described species of the group, *Ozodiceromyia mexicana* Bigot (the type species) and *Ozodiceromyia argentifera* (Kröber), are redescribed, and two new species, ***Ozodiceromyia livdahli*** and ***Ozodiceromyia parargentifera,*** are described. In addition, a neotype is designated for *Phycus argentifer* Kröber, and a lectotype is designated for *Euphycus setosus* Kröber, a junior subjective synonym of *Ozodiceromyia mexicana.* A phylogenetic hypothesis is discussed for the relationships among these taxa, characters and their evolution are discussed, a key to species is provided, and each species is diagnosed.

Key Words: phylogeny, revision, morphology, cladistics

The genus *Ozodiceromyia* Bigot (Diptera: Therevidae) is distributed throughout North and Central America, into northern South America, being most speciose in the dry regions of the southwestern United States, California, and northern Mexico. The genus was treated by Gaimari (1998) from the standpoint of hypothesizing relationships among described species. As a result of cladistic phylogenetic analysis, a well characterized "*mexicana*-group," including *Ozodiceromyia mexicana* Bigot and *Ozodiceromyia argentifera* (Kröber), was demonstrated.

The concept of *Ozodiceromyia* was introduced by Bigot (1890), for the single species *Ozodiceromyia mexicana,* and the genus remained monotypic until *Phycus argentifer* Kröber was included by Cole (1965). Irwin and Lyneborg (1981a) were the first to recognize the diversity of *Ozodiceromyia,* transferring 34 species into the genus, mostly from *Psilocephala* Zetterstedt and *Thereva* Latreille. The list was modified by Gaimari and Irwin (2000) to reflect current opinions on synonymy and to add several new combinations, leaving the genus with 27 valid species. The current revision treats the nominal *mexicana*-species group, seeking to clarify the identities of the two described species within the group, which have often been confused, and to add two new species, both of which can be confused with the described species.

METHODS

Specimens were examined using a Wild/Leica MZ8 binocular dissecting microscope with a range of magnification between 6.3 and 50×. For phylogenetic analyses, a minimum of four male and four female specimens were examined for each species, with the exception of *Ozodiceromyia parargentifera,* which is known from only the holotype male and three female paratypes.

For each species, at least one male ab-

Table 1. Data matrix used in analysis of the *Ozodiceromyia mexicana*-group.

Ozodiceromyia signatipennis	00000 00000 00000 00000 00000 00000 00000 00000 0
Ozodiceromyia costalis	01010 00001 10000 00000 10000 00010 11001 00000 0
Ozodiceromyia argentifera	11111 11101 01101 10001 11100 10101 11110 00011 1
Ozodiceromyia livdahli	11111 11101 01101 10001 11100 00101 11110 00011 1
Ozodiceromyia mexicana	11011 11111 10011 11001 10111 01010 11111 11010 0
Ozodiceromyia parargentifera	11111 11101 00000 10111 11000 10101 11110 00111 1

domen and one female abdomen were macerated and dissected per the procedure outlined in Gaimari and Irwin (2000). Illustrations (carbon dust on clayboard) were made with a camera lucida attached to a Leica MZ12 binocular dissecting microscope with a range of magnification between 8 and 100×. Morphological terminology follows that of Gaimari and Irwin (2000).

Each specimen has been assigned a unique 6-digit number with the prefix "MEI." This number is printed on a yellow label (THEREVIDAE/M. E. Irwin/Specimen #), which is attached to each pinned specimen. This unique number for each specimen facilitates entry and manipulation of data in a specimen-level database of world Therevidae. These numbers are referred to throughout the text, illustrations, and in the "Materials examined" list for each species.

Cladistic analysis.—Phylogenetic analyses follow the cladistic philosophy of parsimony promoted by Hennig (1966) and later by other workers (e.g., Wiley 1981; Farris 1983). The same basic principles, philosophies, and specific methods are followed as outlined in Gaimari and Irwin (2000).

Character polarities were determined using outgroups (Watrous and Wheeler 1981; Farris 1982; Maddison et al. 1984; Nixon and Carpenter 1993) chosen within the context of the phylogeny of the described species of the genus proposed by Gaimari (1998). Cladistic analyses were performed using the exhaustive search option in PAUP (Swofford 1993, version 3.1.1) using the data matrix presented in Table 1. The cladogram figure displaying character state changes was prepared using WINCLADA (Nixon 1999, currently in version 0.9.9 *beta*) under ACCTRAN character optimization (Swofford and Maddison 1987), following the same reasoning as Gaimari and Irwin (2000).

Terminal taxa.—Very few specific hypotheses exist for relationships within *Ozodiceromyia,* and only Gaimari (1998) considered the genus in the broader context of phylogeny. Nonetheless, many undescribed species can be assigned to species-groups based on putative synapomorphies. Gaimari (1998) suggested a close relationship between *Ozodiceromyia argentifera* and *Ozodiceromyia mexicana* based upon the following synapomorphic characteristics: antenna longer than head; setae covering more than the basal half of first flagellomere; first flagellomere fully surrounded by setae equally on all sides; antennal style subapical and not extending beyond tip of first flagellomere; halter yellow (although this state appears in other members of the genus); distal part of ventral lobe of male genitalia with a pilose distal secondary lobe. Based upon these synapomorphic states, two new species have been recognized as members of this group and are described herein, along with redescriptions of the previously described species, and a phylogenetic hypothesis is proposed for the relationships among these taxa.

The two outgroup taxa, *Ozodiceromyia costalis* (Loew, 1869) (MEI 033251, 037735, 037741, 041847, 044821, 044990, 050648, 075851) and *Ozodiceromyia signatipennis* (Cole 1923) (MEI 035882, 041854, 041855, 043837, 044750, 056972, 056973, 071403), were chosen on the basis

of relationships within this genus hypothesized by Gaimari (1998). *Ozodiceromyia costalis* is hypothesized to be closely related to the *mexicana*-group based upon the following synapomorphic characteristics: medial surface of scape setose; medial surface of pedicel setose; setae of male frons in patches or absent, not scattered; face directly below antenna shiny black, with little or no pruinescence (however, *Ozodiceromyia argentifera* displays the state of having silver pruinescence, and so this state is only synapomorphic under accelarated transformation character optimization); presence of projection on gonocoxal apodeme of male genitalia for articulation with aedeagus. *Ozodiceromyia signatipennis* is hypothesized to be a more distant part of this larger clade, based upon the following synapomorphic characteristics: median occipital sclerite of male entirely shiny black, lacking pruinescence; ventral gonocoxal process of male genitalia present as a small fold of the edge.

Descriptions and Redescriptions of Species

The recognized species of the *Ozodiceromyia mexicana*-group are described or redescribed herein, and a dichotomous key is included. An exhaustive list of references for the two previously described taxa is provided by Gaimari (1998), but only taxonomically relevant references are listed herein. Within species descriptions, values in [ ] represent the values taken from paratypes or additional specimens of the same sex. Abbreviations for repositories follow Arnett et al. (1993), and are listed in Table 2.

Ozodiceromyia Bigot

Ozodiceromyia Bigot 1890: 323. Type species: *Ozodiceromyia mexicana* Bigot, by original designation. Sabrosky 1978: 143 (formally fixed spelling as "first reviser"); Gaimari and Irwin 2000 (in phylogeny, key ref., lit. list, list spp., biogeogr.).

Ozodiceronya (incorrect original spelling): Bigot 1890: 321 (orig. descr.); Irwin and Lyneborg 1981a: 203 (key ref.), 254 (redescr.), 1981b: 522 (key ref.).

Ozodiceronyma (misspelling): Godman 1901: 378 (listing).

Phycus Walker 1850, in part: Becker 1912: 294 (prop. *Ozodiceromyia* as junior syn.).

Psilocephala "*haemorrhoidalis*-group": Cole 1923: 34–37 (key ref.), 37 (descr.).

Ozodiceromyia mexicana-group

The small, easily recognized *mexicana*-group is characterized by an elongated antennal scape and first flagellomere, as well as the slightly elongated, barrel-shaped pedicel. In total, the antenna is longer than the head, and is densely setose, including setae on the median surface. This surface is bare in nearly all other members of the genus. Setae cover all but the distal third of the first flagellomere. The stylus is inserted subapically in a ventral pit slightly behind the apex of the first flagellomere. In the wings, the veins are orange, at least in the basal two-thirds; the distal third is often darkened and smoky, with correspondingly darker veins. In the male genitalia, the gonostylus is distinctly expanded ventrally into a large lobe, which is densely covered with fine, pale or orange setae. The sclerotized portions of the ventral lobes are completely separated, and each has a small, secondary lobe distally, covered with fine, short pile. When present, the ventral gonocoxal process is flattened and elongated (the ventral gonocoxal process is absent in *Ozodiceromyia mexicana*). The outer gonocoxal process is flattened and elongated. In the female terminalia, the furca lacks an anterior, sclerotized transverse bar. The common spermathecal duct originates on the furcal membrane within an indented cavity on the posterior part of the furcal bulla.

Synapomorphies.—Antenna longer than head (character 1), setae of first flagellomere covering more than basal half (character 5), setae fully surrounding first flagellomere (character 6), antennal style distinctly subapical (character 7), first stylar segment reduced to flattened ring (character 8), wing

Table 2. List of codons used for repositories of specimens.

AMNH	American Museum of Natural History, New York, New York.
ANIC	Australian National Insect Collection, CSIRO, Canberra, ACT, Australia.
ANSP	Academy of Natural Sciences, Philadelphia, Pennsylvania.
ASUT	Frank M. Hasbrouk Insect Collection, Arizona State University, Tempe, Arizona.
BMNH	The Natural History Museum, London, United Kingdom.
BPBM	Bernice P. Bishop Museum, Honolulu, Hawaii.
BYUC	Monte L. Bean Life Science Museum, Brigham Young University, Provo, Utah.
CASC	California Academy of Sciences, San Francisco, California.
CDFA	California State Collection of Arthropods, California Department of Food and Agriculture, Sacramento, California.
CICESE	Centro de Investicación Cientifica y de Educación Superior de Ensenada, Baja California Norte, Mexico.
CMNH	Carnegie Museum of Natural History, Pittsburgh, Pennsylvania.
CNCI	Canadian National Collection of Insects, Ottawa, Ontario, Canada.
CSUC	C. P. Gillette Arthropod Biodiversity Museum, Colorado State University, Fort Collins, Colorado.
CUIC	Cornell University Insect Collection, Ithaca, New York.
DEIC	Deutsches Entomologisches Institut, Eberswalde, Germany.
DENH	Entomological Museum, University of New Hampshire, Durham, New Hampshire.
EBCC	Estacion de Biologia Chamela, Universidade Nacional Autónoma de México, Jalisco, México.
EMEC	Essig Museum of Entomology, University of California, Berkeley, California.
EMUS	Entomological Museum, Utah State University, Logan, Utah.
ESUW	Rocky Mountain Systematic Entomology Laboratory, University of Wyoming, Laramie, Wyoming.
FMNH	Field Museum of Natural History, Chicago, Illinois.
FSCA	Florida State Collection of Arthropods, Gainesville, Florida.
IEXA	Instituto de Ecología, Xalapa, Vera Cruz, Mexico.
INBC	Instituto Nacional de Biodiversidad, Santo Domingo, Heredia, Costa Rica.
INHS	Illinois Natural History Survey, Champaign, Illinois.
IZAS	Institute of Zoology, Academica Sinica, Beijing, China.
IZAV	Instituto de Zoologia Agricola, Universidad Central de Venezuela, Maracay, Venezuela.
KSUC	Kansas State University Insect Collection, Manhattan, Kansas.
KUIC	Kagoshima University Insect Collection, Kagoshima, Japan.
LACM	Los Angeles County Museum of Natural History, Los Angeles, California.
MCZC	Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.
MEIC	Michael E. Irwin private collection, for eventual deposit in CASC.
MEUC	Museo Entomologico, Universidad de Chile, Santiago, Chile.
MHNG	Muséum d'Histoire Naturelle, Genève, Switzerland.
MNHN	Muséum National d'Histoire Naturelle, Paris, France.
MRSN	Spinola Collection, Museu Regionale di Scienze Naturali, Torino (= Turin), Italy.
MTEC	Montana State University Entomological Collection, Bozeman, Montana.
MUSM	Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Lima, Peru.
MZSP	Museu de Zoologia, Universidade de São Paulo, São Paulo, Brazil.
NHMW	Naturhistorisches Museum Wien, Wien (= Vienna), Austria.
NHRM	Naturhistoriska Riksmuseet, Stockholm, Sweden.
NMSA	Natal Museum, Peitermaritzburg, Natal, South Africa.
NMSU	Insect Collection, New Mexico State University, Las Cruces, New Mexico.
NVDA	Nevada State Department of Agriculture, Reno, Nevada.
NYSM	New York State Museum, Albany, New York.
OSEC	K. C. Emerson Museum, Oklahoma State University, Stillwater, Oklahoma.
OSUC	Museum of Biological Diversity, Ohio State University, Columbus, Ohio.
PMNH	Peabody Museum of Natural History, Yale University, New Haven, Connecticut.
QCAZ	Quito Catholic Zoology Museum, Universidad Catolica del Ecuador, Quito, Ecuador.
SDGC	Stephen D. Gaimari private collection.

Table 2. Continued.

SDMC	San Diego Natural History Museum, San Diego, California.
SEMC	Snow Entomological Collection, University of Kansas, Lawrence, Kansas.
SWRS	Southwestern Research Station of the American Museum of Natural History, Portal, Arizona.
TAMU	Texas A&M University Insect Collection, College Station, Texas.
TAUI	Zoological Museum, Tel Aviv University, Tel Aviv, Israel.
UAIC	University of Arizona Insect Collection, Tucson, Arizona.
UCDC	Bohart Museum of Entomology, University of California, Davis, California.
UCMC	University of Colorado Museum, Boulder, Colorado.
UCRC	UCR Entomological Research and Teaching Collection, University of California, Riverside, California.
UGCA	Museum of Natural History, University of Georgia, Athens, Georgia.
UMRM	W. R. Enns Entomology Museum, University of Missouri, Columbia, Missouri.
UNAM	Colección Nacional de Insectos, Universidad Nacional Autónoma de México, México, Distrito Federal, México.
UNSM	University of Nebraska State Museum, Lincoln, Nebraska.
USNM	National Museum of Natural History, Smithsonian Institution, Washington, District of Columbia.
WFBM	W. F. Barr Entomological Collection, University of Idaho, Moscow, Idaho.
WSUC	Maurice T. James Entomological Collection, Washington State University, Pullman, Washington.
ZMAS	Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia.
ZMHB	Museum für Naturkunke, Humboldt Universtitat, Berlin, Germany.
ZMUC	Zoological Museum, University of Copenhagen, Copenhagen, Denmark.

cloudy yellow or orange and darkened distally (character 16), distiphallus longer than dorsal apodemes (character 20), distiphallus recurved before apex, becoming parallel with dorsal apodemes (character 23; with subsequent change to perpendicular in *Ozodiceromyia parargentifera*), secondary distal lobe present at tip of ventral lobe (character 33), ventral part of gonostylus expanded into large lobe (character 34), anterior margin of furcal bulla indented as a cavity to house the common spermathecal duct (character 39). Synapomorphies for *Ozodiceromyia parargentifera* + *Ozodiceromyia argentifera* + *Ozodiceromyia livdahli*: setae of scape shorter than or subequal to setae of first flagellomere (character 3), basal portion of distiphallus swollen (character 22), gonocoxal setae all black (character 26; with subsequent change to pale setae in *Ozodiceromyia livdahli*), ventral gonocoxal process present, elongated, and flanged (character 28), setae of outer gonocoxal process present (character 30), subapical spur of gonostylus absent (character 35), basal part of common spermathecal duct distinctly widened, tapering quickly (character 40), spermathecal ducts originate from common spermathecal duct (character 41). Synapomorphies for *Ozodiceromyia argentifera* + *Ozodiceromyia livdahli*: ♂ notum with thick, decumbent pile (character 12), fine, erect setae of ♂ notum entirely pale or gold (character 13).

Ozodiceromyia argentifera (Kröber)
(Figs. 7–8, 13, 14–15, 17–19, 26–27, 32–33, 39)

Phycus argentifer Kröber 1929: 418. Type locality: Oaxaca, Mexico. Type: NT♂ (designated herein) in ZHMB. Kröber 1929: 418 (comment on affinity with *Ozodiceromyia,* illust.: antenna).

Ozodiceromyia argentifera: Cole 1965: 349 (comb. change, cat. cit.); Gaimari 1998: 117 (lit. list), 157–159 (in phylogeny), 188–267 (illust.: ♂ and ♀ heads, lat. thorax, wing base, ♂ and ♀ pregenit. segs. and genit.); Gaimari and Irwin 2000 (in phylogeny; illust.: ♂ and ♀ heads, lat.

thorax, wing base, ♂ and ♀ pregenit. segs. and genit.).

Ozodiceromya (sic) *argentifera*: Irwin and Lyneborg 1981a: 257 (listing).

Male.—*Body length:* 8.5 mm.

Head (Fig. 7): 1.2 mm long, 2.2 mm wide, 1.7 mm high. Distance between eyes at antennal level 0.50 mm; at genal level 0.78 mm. Antenna brown, except basal half of scape orange. Scape 1.11 mm long, 0.15 mm wide; with short, fine, black setae, evenly distributed over entire scape (including median surface), and few larger setae in basal half. Pedicel 0.24 mm long, barrel-shaped, setose (including median surface). First flagellomere 1.02 mm long, 0.17 mm wide; with short setae covering basal two-thirds. Stylus 0.09 mm long, inserted subapically in ventral pit. Antennal base to nearest edge of eye 0.18 mm. Frons bulging 0.09 mm beyond eye in lateral view. Face below antenna with silver pruinescence. Parafacial lacking pile, with silver pruinescence extending to antennal base and dorsally along eye margin halfway up frons. Frons otherwise shiny black; with few, short, fine, black setae (0.15 mm long) dorsolateral to antennal base; remainder of frons bare. Genal pile short, darkened. Palpal pile white basally, dark brown distally. Postgenal and occipital pile white; occiput with silver pruinescence only along edge of eye, and with several black setae. Median occipital sclerite flattened; glabrous, shiny black; upper edge not rounded. Postocular setae black, arranged in single, transverse row. Ocellar tubercle with silver pruinescence, and fine, forward-directed, black setae.

Thorax (Fig. 14): Scutum and scutellum with appressed and semi-appressed gold pile. Scutum 2.6 mm long, 1.7 mm wide; ground color black; with silver-blue pruinescence dorsally, lacking pruinescence laterally; median vitta diffuse bronze; dc vittae absent; 1 pair [or lacking] dc setae. Scutellum with silver pruinescence, reduced pruinescence anteriorly. Halter yellow, except base of stalk brown. Katatergite with dense, long, white pile. Anepimeron, katepimeron, and meron lacking pile, and with reduced silver pruinescence, appearing as vertical brown stripe from wing base to between second and third coxae. Anepisternum with silver pruinescence, and with white pile. Katepisternum with silver pruinescence, with white pile only on vertical crest along middle of pleurite. Prepimeron with silver pruinescence, lacking pile.

Legs: Coxae with silver pruinescence, posterior surfaces less so. Posterior surface of hindcoxa lacking pile (Fig. 14). Femora dark brown; with appressed, scale-like brown and white pile dorsally. Fore- and midfemora also with erect and recumbent brown and white pile. Tibiae with short, erect, black setae; proximal, dorsal surface with sparser setal covering. Foretibia orange on basal half, becoming dark brown distally; clavate distally. Midtibia orange, becoming darkened distally. Hindtibia orange. Foretarsus dark brown. Mid- and hindtarsi dark brown except for basal two tarsomeres mostly orange.

Wing: 6.5 mm long. Basal costal lobe with setae arranged in line along outer edge, extending into outer row of costal setae; second line of setae along base of basal costal lobe, extending into inner row of costal setae (Fig. 15). Entire membrane slightly darkened; veins and membrane orange basally, brown distally.

Abdomen: Tergites with erect and recumbent, white pile, except tergite 1 with recumbent brown pile mediodorsally; dorsally, with silver pruinescence; laterally, lacking pruinescence (showing dark brown ground color), except tergite 1 and posterior edges of basal tergites with silver pruinescence. Sternites with silver pruinescence only along anterior edge of sternite 2.

Terminalia: (MEI 037789). Sternite 8 (Fig. 17) with black setae restricted to posterior edge, which is emarginate medially. Tergite 8 (Fig. 18) dumbell-shaped, with black setae restricted to posterior edge. Epandrium (Fig. 23) 0.24 mm long, 0.72

mm wide at widest point; orange; emarginate anteriorly; dorsal surface with black setae on posterior half; lateral edges parallel; posterolateral corners extended posteriorly. Subepandrial plate (Fig. 23) attached to posterolateral and posterior edges; sclerotized portion V-shaped posteriorly. Sclerotized portion of cerci 0.24 mm long; extending posteriorly beyond posterolateral corners of epandrium; subequal in length to ventral epandrial sclerite. Gonocoxites (Figs. 26–27) 0.83 mm wide; orange; with black setae, up to 0.45 mm long; fusion 0.39 mm long at midline, lacking suture. Inner gonocoxal process flanged; knob with several black setae. Outer gonocoxal process flange-like, 0.38 mm long; with small patch of short, fine setae dorsodistally. Gonocoxal apodeme entirely within anterior edge of gonocoxite; lacking sclerotized bridge to parameral sheath of phallus. Ventral gonocoxal process 0.26 mm long, tapering distally; bare. Ventral lobes distinct, fused basally by thin, transparent membrane. Gonostylus (Fig. 19) expanded ventrally into large lobe; with dorsobasal lobe; with subapical, lateral spur. Dorsal apodemes (Fig. 32) of aedeagus parallel; subequal in length to ventral apodeme; parameral sheath smooth dorsally. Ventral apodeme uniformly wide; lacking ventral keel. Ejaculatory apodeme 0.38 mm long; stick-like, slightly expanded distally. Lateral ejaculatory process a complete ring dorsally, but notched; set into aedeagus; lightly sclerotized. Distiphallus swollen basally, long, recurved; distally parallel with ventral apodeme (Fig. 33).

Female.—Similar to ♂ except as follows: body length 10.0 mm.

Head (Fig. 8): 1.4 mm long, 2.5 mm wide, 1.6 mm high. Distance between eyes at level of anterior ocellus 0.53 mm; at antennal level 1.01 mm; at genal level 1.13 mm. Scape 1.35 mm long, 0.18 mm wide. First flagellomere 1.19 mm long, 0.18 mm wide. Antennal base to nearest edge of eye 0.35 mm. Frons bulging 0.17 mm beyond eye in lateral view. Parafacial pruinescence ends at antennal level. Frons shiny black; lower frons bulging to antennal base; upper frons bulging, distinct from lower frons, with short, black setae (up to 0.18 mm long) in patch between edge of eye and midline. Median occipital sclerite and upper edge rounded; transverse row of black setae across median occipital sclerite in addition to row of postocular setae.

Thorax: Scutum and scutellum with short, recumbent, black and gold pile. Scutum 2.8 mm long, 2.1 mm wide. Pile of anepisternum and katepisternum short, white.

Wing: 7.4 mm long.

Abdomen: Tergites and sternites lacking pruinescence (showing dark brown ground color), except posterolateral edges of tergites 2 and 3 with silver pruinescence. Tergites covered with short, fine, appressed gold pile.

Terminalia (Fig. 39): Furca 0.53 mm long, 0.33 mm wide; anterior edge not sclerotized; anterolateral prongs dorsoventrally flattened, separation subequal to greatest width of furca. Furcal bulla not sclerotized; posteriorly with indented cavity. Gonopore basal to furcal bulla, originating within posterior cavity. Common spermathecal duct basally 0.11 mm wide, tapering to 0.05 mm within 0.33 mm distance from gonopore; 0.68 mm long. Spermathecal ducts originate from clean trifurcation with central sac duct; central sac duct wider in basal diameter than spermathecal ducts. Central sac duct 0.45 mm long. Central sac 0.69 mm long, 0.39 mm wide. Spermatheca 0.18 mm in diameter; rounded, but basal edge slightly flattened.

Type material.—NEOTYPE (here designated): pinned ♂ (MEI 027042) with the following labels: 10 mi. NE Haujuapan de Leon, Oax.(aca), Mex.(ico), VI-27-1965, Burke, Meyer, Schaffner/Neotypus ♂, Phycus argentifer Kröber, designated in 1998 by SD Gaimari et ME Irwin (red label)/ Ozodiceromyia argentifera (Kröber), det. S. D. Gaimari, 1997. This pinned specimen is

in excellent condition, and is deposited in ZMHB (with permission of TAMU).

The designation of a neotype in this circumstance is warranted under article 75.3 of the *International Code of Zoological Nomenclature,* Fourth Edition, for the following reasons: 75.3.1) designation of this neotype is done for the express purpose of fixing the identity of a species where three similar species occur, two of which are new to science; 75.3.2) the characters that differentiate this taxon from other taxa are contained in both the species diagnosis and key in the present work; 75.3.4) the holotype was confirmed lost in the postal system (the package was shipped from Berlin by post, and a broken (likely crushed open or deliberately slit open along the box's edge) box half full with packing material arrived in Illinois; staff in Berlin and in Illinois made inquiries with the postal services, confirming that the specimen was lost); 75.3.5) the original type locality (Veracruz, Mexico) allows only for certain possible identities, all of which are excluded except the current species due to morphological characteristics in the original description (e.g., area under antennae is silver-white excludes *Ozodiceromyia mexicana,* and the yellow halter excludes *Ozodiceromyia parargentifera*); the original description fully matches the holotype description; 75.3.6) Oaxaca, Mexico is as close to Veracruz as any of the known specimens.

Materials examined.—MEXICO: *Chihuahua,* Cuiteco, T. A. Sears, P. C. Gardner, C. S. Glaser, 29-VII-1969 (1 ♂, MEI 052225, UCDC); *Durango,* 19.3 km W of Dolores Hidalgo, E. M. Fisher, J. L. Fisher, 7-IX-1970 (1 ♂, MEI 037789, SDGC); 8.1 km W of Durango, 1981.2 m, J. F. McAlpine, 23-VII-1964 (1 ♀, MEI 052215, CNCI); 11.3 km W of Durango, 2,133.6 m, W. C. McGuffin, 26-VII-1964 (1 ♀, MEI 052230, SDGC), W. R. M. Mason, 11-VIII-1964 (1 ♀, MEI 052210, CNCI), 22-VII-1964 (1 ♀, MEI 052214, CNCI; 1 ♀, MEI 052217, ZMHB), 2,286 m, W. R. M. Mason, 14-VII-1964 (1 ♂, MEI 052213, BMNH); 17.7 km W of Durango, 2,133.6 m, J. F. McAlpine, 29-VII-1964 (1 ♀, MEI 052218, CNCI), L. A. Kelton, 2-VII-1964 (1 ♂, MEI 038785, CNCI); 28.98 km W of Durango, 2,194.56 m, J. A. Chemsak, 31-VII-1964 (1 ♂, MEI 045406, CASC); 32.2 km W of Durango, 2,133.6 m, Rio Chico, J. F. McAlpine, 10-VIII-1964 (1 ♀, MEI 052208, CNCI), 22-VII-1964 (1 ♂, MEI 052212, 1 ♀, MEI 052216, ZMUC; 1 ♂, MEI 052219, CNCI; 1 ♀, MEI 052211, BMNH; 1 ♀, MEI 052209, MEIC), 2,194.56 m, L. A. Kelton, 23-VII-1964 (1 ♂, MEI 052207, MEIC); *Jalisco,* 13 km. N Autlan [de Navarro], Carn. Mina San Francisco, F. A. Noguera, A. Rodriguez, 29-VI-1995 (1 ♀, MEI 103438, UNAM); 13 km NE San Gabriel, A. Rodriguez, F. A. Noguera, 8-X-1994 (1 ♂, MEI 051278, 1 ♀, MEI 051277, UNAM; 1 ♀, MEI 051276, MEIC); 16 km N of Autlan [de Navarro], Carroll, Friedlander, J. C. Schaffner, 7-VII-1984 (1 ♀, MEI 027077, TAMU); 40.3 km SE of Atotonilco, J. W. MacSwain, 23-VII-1952 (1 ♂, MEI 038789, ♂ & ♀ *in copula,* MEI 052171, 052172, EMEC; 1 ♂, MEI 038790, SDGC; 1 ♀, MEI 038788, AMNH); [Estacion de] Biol.[ogia] Chamela, E. Ramírez, 8-VII-1988 (1 ♀, MEI 051279, EBCC); Estacion de Biologia Chamela, E. Ramírez, 17-VII-1981 (1 ♂, MEI 051280, EBCC); Guadalajara, McConnell, 1909 (1 ♀, MEI 078359, CMNH); *Michoacán,* 29 km NW of Quiroga, 2,072.64 m, R. H. Painter, E. M. Painter, 22-VIII-1962 (1 ♀, MEI 052183, KSUC); *Morelos,* 7.1 km E of Cuernavaca, Clark, Murray, Ashe, J. C. Schaffner, 6-VII-1974 to 7-VII-1974, at light, (1 ♀, MEI 026699, TAMU); 38 km W Iguala Gro. [probably referring to Iguala de la Indepencia, near the Morelos border in Guerrero], J. Chemsak, A. Michelbacher, M. Michelbacher, 23-VII-1983 (1 ♀, MEI 081501, USNM); *Nayarit,* Ahuacatlan, P. D. Hurd, 18-VII-1951 to 22-VII-1951, on fl[ower]s. of *Donnellsmithia hintonii* (1 ♂, MEI 038786, AMNH); *Oaxaca,* 16.1 km NE of Huajuapan de León, Burke, Meyer, J. C. Schaffner, 27-VI-1965 (1 ♀, MEI

Fig. 1. Known distribution for *Ozodiceromyia argentifera.*

027043, SDGC); *Puebla,* 6.4 km NW Tepanco de Lopez, 2-VII-1952, Univ. Kans. Mex. Expedition (1 ♀, MEI 052179, SEMC); 8 km S of Tecomachalco, 2103.12 m, M. E. Irwin, 10-VIII-1967, flight trap, narrow canyon (1 ♂, MEI 052195, UCRC); *Zacatecas,* 15 km E of Sombrerete, P. D. Hurd, 28-VII-1951 to 31-VII-1951 (1 ♀, MEI 038783, EMEC).

Diagnosis.—The scape in this species is setose, but most of the setae are short, with few longer ones. The lower frons bulges only slightly, with silver pruinescence laterally, extending down along parafacial. The face below the antenna also has silver pruinescence. In males, the notum is densely covered with erect and appressed gold pile. In females, the gold pile on the notum and abdominal tergites is short, fine, and appressed. In the male genitalia, the setae of the epandrium and gonocoxites are black. The subepandrial plate is attached to the epandrium at the posterolateral corners, and the sclerotized portion of the subepandrial plate is V-shaped posteriorly. The gonocoxites lack a suture along the midline separating the two lateral halves. The outer gonocoxal process is widened distally, with a small patch of setae on the dorsolateral surface. The ventral gonocoxal process of the gonocoxites is present, elongated and flattened; there are no clumped setae at its base. The base of the ventral lobes is U-shaped and broad between the two halves. The parameral sheath of the aedeagus is smooth dorsally. The ventral apodeme lacks a ventral keel. The distiphallus is swollen basally, and is recurved and parallel with the ventral apodeme at the tip. In the female terminalia, the furca is not notched posteriorly, and lacks a posterolateral peg. The anterolateral furcal prongs are separated by a distance subequal to the greatest width of the furca. The common spermathecal duct is broad basally, at half the width of the entire furca; the duct tapers quickly.

Autapomorphies.—No character states in the current analysis appear to be autapomorphic for this species. Despite this, the gold (as opposed to pale) coloration of the decumbent pile on the male notum may be autapomorphic.

Distribution.—The known distribution for this species is found in Fig. 1. Nearly all specimens were collected near 2,000 m elevation, with the exceptions of 1 ♂ and 1

♀ collected under 500 m in Chamela, Jalisco. The distribution encompasses parts of the following biogeographical regions: the Provincia Xerófila Mexicana, the Provincia Mesoamericana de Montaña, and the Provincia Pacifica.

Biology.—This species appears to be most abundant in the month of July, with a period of activity from late June to early October. One ♂ was collected at a flower of *Donnellsmithia hintonii* Mathias and Constance (Asteraceae).

Ozodiceromyia livdahli Gaimari and Irwin, new species

(Figs. 24, 28)

Male.—*Body length:* 7.6 mm.

Head: 1.11 mm long, 2.12 mm wide, 1.23 mm high. Distance between eyes at antennal level 0.60 mm; at genal level 0.98 mm. Antenna brown, except basal half of scape orange. Scape 1.02 mm long, 0.12 mm wide; with short, fine, black setae, evenly distributed over entire scape (including median surface), and few larger setae. Pedicel 0.23 mm long, barrel-shaped, setose (including median surface). First flagellomere 0.92 mm long, 0.15 mm wide; with short setae covering basal two-thirds. Stylus 0.11 mm long, inserted subapically. Antennal base to nearest edge of eye 0.15 mm. Frons bulging 0.12 mm beyond eye in lateral view. Face below antenna with silver pruinescence. Parafacial lacking pile, with silver pruinescence extending to antennal base and dorsally along eye margin halfway up frons. Frons otherwise shiny black; with few, short, fine, black setae (0.14 mm long) dorsolateral to antennal base; remainder of frons bare. Genal pile short, darkened. Palpal pile white basally, dark brown distally. Postgenal and occipital pile white; occiput with silver pruinescence only along edge of eye, and with several black setae. Median occipital sclerite flattened; glabrous, shiny black; upper edge not rounded. Postocular setae black, arranged in single, transverse row. Ocellar tubercle with silver pruinescence, and fine, forward-directed, black setae.

Thorax: Scutum and scutellum with appressed, flattened, pale [or gold] pile, and erect, pale [or gold] pile. Scutum 2.30 mm long, 1.80 mm wide; ground color black; with silver-grey pruinescence dorsally, lacking pruinescence laterally; median vitta diffuse bronze; dc vittae faintly present only as lines of reduced pruinescence; dc setae absent [or 1 pair present]. Scutellum with silver pruinescence, reduced pruinescence anteriorly. Halter yellow, except base of stalk brown. Katatergite with dense, long, white pile. Anepimeron, katepimeron, and meron lacking pile, and with reduced silver pruinescence, appearing as vertical brown stripe from wing base to between second and third coxae. Anepisternum with silver pruinescence, and with white pile. Katepisternum with silver pruinescence, with white pile only on vertical crest along middle of pleurite. Prepimeron with silver pruinescence, lacking pile.

Legs: Coxae with silver pruinescence, posterior surfaces less so. Posterior surface of hindcoxa lacking pile. Femora dark brown; with appressed, scale-like white and brown pile dorsally. Fore- and midfemora with erect and long, recumbent, white pile. Tibiae with short, erect, black setae; proximal, dorsal surfaces with sparser setal covering, or nearly bare. Foretibia orange basally, becoming dark brown distally; clavate distally. Midtibia orange, becoming darkened distally. Hindtibia orange. Foretarsus dark brown. Mid- and hindtarsi dark brown except basal two tarsomeres mostly orange.

Wing: 6.18 mm long. Basal costal lobe with setae arranged in line along outer edge, extending into outer row of costal setae; second line of setae along base of basal costal lobe, extending into inner row of costal setae. Entire membrane slightly darkened; veins and membrane orange basally, brown distally.

Abdomen: Tergites with erect and recumbent, white pile, except tergite 1 with recumbent brown pile medioposteriorly;

dorsally, with silver pruinescence; laterally, lacking pruinescence (showing dark brown ground color), except tergite 1 and posterior edges of basal tergites with silver pruinescence. Sternites with silver pruinescence only along anterior edge of sternite 2.

Terminalia (paratype, MEI 038822): Sternite 8 with fine black setae restricted to posterior edge, which is emarginate medially. Tergite 8 dumbell-shaped, with fine black setae restricted to posterior edge. Epandrium 0.23 mm long, 0.66 mm wide at widest point; orange; emarginate anteriorly; dorsal surface with white setae on posterior half (Fig. 24); lateral edges parallel; posterolateral corners extended posteriorly. Subepandrial plate attached to posterolateral and posterior edges; sclerotized portion V-shaped posteriorly. Sclerotized portion of cerci 0.23 mm long; extending posteriorly slightly beyond posterolateral corners of epandrium; subequal in length to ventral epandrial sclerite. Gonocoxites 0.80 mm wide; orange; with white setae (Fig. 28), up to 0.45 mm long; fusion 0.36 mm long at midline, lacking suture. Inner gonocoxal process flanged; knob with several white setae. Outer gonocoxal process flange-like, 0.38 mm long; with small patch of short, fine setae dorsodistally. Gonocoxal apodeme entirely within anterior edge of gonocoxite; lacking sclerotized bridge to parameral sheath of phallus. Ventral gonocoxal process 0.23 mm long, tapering distally; bare. Ventral lobes distinct, fused basally by thin, transparent membrane. Gonostylus expanded ventrally into large lobe; with dorsobasal lobe; with subapical, lateral spur. Dorsal apodemes of aedeagus parallel; subequal in length to ventral apodeme; parameral sheath smooth dorsally. Ventral apodeme uniformly wide; lacking ventral keel. Ejaculatory apodeme 0.30 mm long; sticklike, slightly expanded distally. Lateral ejaculatory process a complete ring dorsally, but notched; set into aedeagus; lightly sclerotized. Distiphallus swollen basally, long, recurved; distally parallel with ventral apodeme.

Female.—Similar to ♂ except as follows: body length 10.1 mm.

Head: 1.25 mm long, 2.30 mm wide, 1.65 mm high. Distance between eyes at level of anterior ocellus 0.51 mm; at antennal level 0.96 mm; at genal level 1.04 mm. Scape 1.29 mm long, 0.17 mm wide. First flagellomere 1.04 mm long, 0.17 mm wide. Antennal base to nearest edge of eye 0.30 mm. Frons bulging 0.15 mm beyond eye in lateral view. Frons shiny black; lower frons with short (up to 0.09 mm long) setae dorsolateral to antennal base; upper frons distinctly bulging and distinct from lower frons, with small patch of setae (up to 0.09 mm long) between edge of eye and midline. Median occipital sclerite and upper edge rounded; transverse row of black setae across median occipital sclerite in addition to row of postocular setae.

Thorax: Scutum and scutellum with appressed and semi-appressed white pile. Scutum 2.75 mm long, 1.95 mm wide. Pile of anepisternum and katepisternum short, white.

Wing: 7.26 mm long.

Abdomen: Tergites and sternites mostly lacking pruinescence; tergites with short, fine appressed brown and white pile.

Terminalia: Furca 0.54 mm long, 0.32 mm wide; anterior edge not sclerotized; anterolateral prongs dorsoventrally flattened, separation subequal to greatest width of furca. Furcal bulla not sclerotized; posteriorly with indented cavity. Gonopore basal to furcal bulla, originating within posterior cavity. Common spermathecal duct basally 0.11 mm wide, tapering to 0.05 mm within 0.33 mm distance from gonopore; 0.93 mm long. Spermathecal ducts originate from clean trifurcation with central sac duct; central sac duct wider in basal diameter than spermathecal ducts. Central sac duct 0.45 mm long. Central sac 0.68 mm long, 0.39 mm wide. Spermatheca 0.18 mm in diameter; rounded, but basal edge slightly flattened.

Type materials.—HOLOTYPE ♂ (MEI 038101) with the following labels: 5 mi. E

Fort Apache, ARIZ[ona]., VIII-28–1964, E. I. Schlinger. This pinned specimen is in excellent condition, and is deposited in CASC.

Materials examined.—PARATYPES. MEXICO: *Chihuahua,* D. J. Knull, J. N. Knull, 22-VII-1961 (1 ♀, MEI 038853, SDGC), 29-VII-1955 (1 ♀, MEI 038858, SDGC) ; J. N. Knull, 18-VIII-1936 (1 ♂, MEI 038854, OSUC); 2,072.64 m, J. A. Chemsak, 14-VII-1964 (2 ♂, MEI 038817, 038818, EMEC), J. A. Chemsak, J. A. Powell, 14-VII-1964, black and white lights (1 ♂, MEI 038837, EMEC), J. A. Powell, 15-VII-1964 (1 ♂, MEI 038815, EMEC); 2,011.68 m, D. Rockefeller, Gertsch Exp., 21-VII-1947 (1 ♀, MEI 038791, AMNH); 8.1 km W of Parrita, Santa Clara Canyon, D. D. Linsdale, 3-IX-1956 (1 ♀, MEI 052154, USNM), J. W. MacSwain, 3-IX-1956 (1 ♂, MEI 052159, USNM; 1 ♂, MEI 038874, 2 ♀, MEI 038873, 038875, EMEC; 1 ♀, MEI 052158, SDGC); 20.9 km E of Cuauhtemoe, 2,011.68 m, J. A. Chemsak, 11-VII-1964 (1 ♀, MEI 038780, EMEC); La Bufa, Sierra Madre Mountains, 900 m, D. D. Giuliani, 7-VII-1972 (1 ♂, MEI 052246, SDGC); *Sinaloa,* bet.[ween] NW of Culiacan & Las Mochis, D. Spencer, R. Ryckman, J. Ryckman, A. Ryckman, 21-VII-1957 (1 ♂, MEI 038787, UNAM); ca. 100 km NW of Culiacan, D. Spencer, R. Ryckman, J. Ryckman, A. Ryckman, 21-VII-1957 (1 ♂, MEI 038779, UNAM).

UNITED STATES: *Arizona, Cochise County,* L. D. Anderson, 21-VIII-1966, at light (1 ♀, MEI 040761, SDGC) ; M. Statham, 19-VIII-1959 (1 ♀, MEI 053688, AMNH); Mina Canyon, 20-VII-1925 (1 ♂, MEI 041774, DENH); Chiricahua Mts., J. K. Robertson, 1-VIII-1965 to 2-VIII-1965 (2 ♀, MEI 030930, 030931, LACM); K. W. Brown, 7-VIII-1965, UV light (1 ♂, MEI 038868, INBC; 1 ♀, MEI 038865, ZMAS); R. M. Bohart, 6-VIII-1958 (1 ♂, MEI 038915, NHMW); 1.6 km S of Portal, E. G. Linsley, J. M. Linsley, 16-VIII-1966 (1 ♀, MEI 038870, EMEC) ; 1.6 km SW of Portal, J. A. Powell, 11-VII-1972 to 18-VII-1972 (1 ♂, MEI 038825, ZMAS; 1 ♂, MEI 038826, NMSA; 1 ♂, MEI 038827, INHS; 1 ♂, MEI 038828, ASUT; 1 ♂, MEI 038829, BMNH; 1 ♂, MEI 038830, MEIC); 1.61 km E, 8.05 km N of Portal, 2-IX-1959, at light (1 ♂, MEI 043432, UMSP) ; 2.7 km W of Portal, S. I. Frommer, S. L. Frommer, 22-VIII-1975, dry stream bed (1 ♂, MEI 052194, UCRC); 3.2 km NE Portal, 1645.92 m, J. Wilcox, 20-IX-1962 (1 ♂, MEI 038878, MEIC); 4.8 km S of Paradise, A. B. Patterson, 9-VIII-1966, malaise trap (1 ♂, MEI 038813, SDGC); 4.8 km W of Portal, D. P. Levin, 28-VIII-1971, black light (1 ♀, MEI 034099, DENH); 8.1 km W of Portal, C. G. Moore, 8-VIII-1958 (1 ♀, MEI 038912, MNHN), G. B. Pitman, 19-VIII-1958 (1 ♂, MEI 038904, IZAS; 1 ♂, MEI 038916, BYUC), P. M. Marsh, 13-VIII-1958 (1 ♂, MEI 029552, SDGC), P. Opler, 11-VIII-1958 (1 ♀, MEI 056915, EMEC), 1,645.92 m, V. D. Roth, 9-VIII-1965 (1 ♂, MEI 038903, UNAM); 9.7 km N of Portal, L. D. Anderson, M. D. Anderson, 20-VIII-1970 (1 ♀, MEI 038848, SDGC); Cave Creek Canyon, 5,000′, D. R. Corr, 7-VIII-1986, malaise trap (1 ♂, MEI 110058, MTEC), 6.4 km SSW of Portal, R. Davidson, 24-VIII-1981, malaise trap (1 ♂, MEI 052169, CMNH); Cave Creek Ranch, G. R. Ballmer, 15-VIII-1965, UV light (1 ♀, MEI 038861, FMNH), R. Silberglied, 16-VIII-1966, black light (1 ♀, MEI 038866, CUIC), 1524 m, K. W. Brown, 10-VIII-1965 (1 ♀, MEI 038863, ESUW), M. E. Irwin, 13-VIII-1965 (1 ♀, MEI 038893, MHNG), Portal, E. G. Linsley, 1-VIII-1972 to 3-VIII-1972 (1 ♀, MEI 038809, EMEC), J. A. Powell, 2-VII-1972 to 4-VII-1972 (1 ♂, MEI 038831, BPBM; 2 ♂, MEI 038832, 038833, 2 ♀, MEI 038834, 038835, EMEC; 1 ♀, MEI 038836, ASUT), 3-VII-1972 to 4-VII-1972 (1 ♂, MEI 038822, MEIC; 1 ♂, MEI 038823, CSUC; 1 ♂, MEI 038824, TAMU; 1 ♂, MEI 038821, 2 ♀, MEI 029554, 038820, EMEC; 1 ♀, MEI 038819, MUSM), R. Silberglied, 21-VIII-1966, black light—UV (1 ♂, MEI 038869,

CUIC), 1.6 km S of Portal, 21-VIII-1969 to 26-VIII-1969 (1 ♂, MEI 038843, NMSU), E. G. Linsley, J. M. Linsley, 15-VIII-1970 to 20-VIII-1970 (1 ♂, MEI 038844, EBCC; 1 ♂, MEI 038842, 1 ♀, MEI 038845, MEIC; 1 ♀, MEI 038846, CICESE; 1 ♀, MEI 038847, EMEC; 1 ♀, MEI 038839, UCMC; 1 ♀, MEI 038840, IZAV; 1 ♀, MEI 038841, MZSP); Chiricahua National Monument, L. M. Martin, 23-VIII-1951 (1 ♀, MEI 030937, LACM); Paradise, G. R. Ballmer, 6-VIII-1966, malaise trap (1 ♂, MEI 038889, ZMHB; 1 ♂, MEI 038890, MZSP; 1 ♂, MEI 038891, MRSN; 1 ♀, MEI 038909, CASC; 1 ♀, MEI 038910, TAMU; 1 ♀, MEI 038911, UNAM); Portal, E. I. Schlinger, 11-VIII-1967 (1 ♀, MEI 038849, SDGC; 1 ♀, MEI 038850, MEIC), J. A. Powell, 2-VII-1972 to 4-VII-1972, at light (1 ♂, MEI 038792, EMEC), R. M. Bohart, 15-VIII-1958 (1 ♀, MEI 029555, SDGC), 1524 m, H. E. Evans, 9-VIII-1959 (1 ♀, MEI 038812, ZMUC); Rucker Canyon, R. M. Bohart, 24-VIII-1979 (1 ♂, MEI 052226, UCDC); Southwestern Research Station, 8.1 km W of Portal, P. D. Hurd, 3-VIII-1958 (1 ♀, MEI 038872, NMSU), 11-VIII-1958 (1 ♀, MEI 038871, EMEC), South Fork Cave Creek, P. H. Arnaud, 5-IX-1959 (1 ♂, MEI 052249, 1 ♀, MEI 052248, CASC), 1645.92 m, 14-VIII-1970 (1 ♀, MEI 038838, MEIC), H. E. Evans, 18-VIII-1959 (1 ♀, MEI 038811, UNAM), M. Statham, 26-VII-1957 (1 ♂, MEI 052232, AMNH), 27-VII-1959 (1 ♀, MEI 052233, AMNH), M. S. Wasbauer, 8-VIII-1978 to 9-VIII-1978, malaise trap (1 ♂, MEI 071419, CNCI; 1 ♂, MEI 071420, 1 ♀, MEI 071440, CDFA), 10-VIII-1978 to 11-VIII-1978, malaise trap (1 ♀, MEI 071426, CDFA), 14-VIII-1978 to 15-VIII-1978, malaise trap (1 ♂, MEI 071421, WSUC; 1 ♂, MEI 071422, SDGC; 2 ♀, MEI 071424, 071425, CDFA), 16-VIII-1978 to 17-VIII-1978, malaise trap (1 ♂, MEI 071448, CDFA), V. D. Roth, 9-IX-1979 (2 ♀, MEI 026953, 026954, SWRS), 15-VIII-1965 to 20-VIII-1965 (1 ♂, MEI 026986, SWRS); Sulphur Draw, G. R. Ballmer, 7-VIII-1965, UV light (1 ♂, MEI 038862, NVDA); Sunny Flat, 6.4 km W of Portal, C. W. Melton, 27-VIII-1979, black light (1 ♀, MEI 071409, CDFA; 1 ♀, MEI 070409, CSUC); Tex Canyon, F. G. Andrews, 6-VIII-1967 (1 ♂, MEI 038851, DEIC); Dragoon Mountains, Cochise Stronghold, R. J. Shaw, 12-VIII-1970 to 16-VIII-1970, UV light (1 ♀, MEI 076933, ANIC); Huachuca Mountains, D. J. Knull, J. N. Knull, 20-VII-1937 (1 ♀, MEI 052160, USNM), J. S. Hine, 28-VII-1907 (1 ♀, MEI 052222, OSUC), R. L. Westcott, 16-VIII-1966 (1 ♀, MEI 079534, WFBM); 13 km SE of Sunnyside, 1,813.56 m, R. R. Snelling, 23-VIII-1971 (1 ♂, MEI 030927, 1 ♀, MEI 030932, LACM); Ash Canyon, N. McFarland, 15-IX-1983 (1 ♂, MEI 052161, 1 ♀, MEI 052162, USNM), 1554.48 m, N. McFarland, 13-VIII-1982, UV light (1 ♀, MEI 052170, SDMC), 1676.4 m, R. R. Snelling, 20-VIII-1971 (2 ♂, MEI 030928, 030940, LACM); Carr Canyon, E. P. Van Duzee, 5-VIII-1924 (1 ♂, MEI 029553, MCZC), J. O. Martin, 6-VIII-1924 (1 ♀, MEI 038816, MCZC), 1,645.92 m, C. W. O'Brien, 7-IX-1995, black light (1 ♂, MEI 038782, EMEC), H. B. Leech, J. W. Green, 8-VIII-1952 to 9-VIII-1952, floor of Carr Canyon (1 ♂, MEI 052234, CASC); Copper Canyon, W. F. Barr, 5-VIII-1990, beat. *Quercus* (1 ♂, MEI 079905, 1 ♀, MEI 079904, WFBM), at Rd. 61, Sec. 10, T23S, R29E, W. F. Barr, 31-VII-1979 (1 ♀, MEI 079468, NYSM), 1,828.8 m, Y. F. Hsu, J. Powell, M. Prentice, 3-VIII-1989, black light—UV (1 ♂, MEI 081462, EMEC); Miller Canyon, G. E. Wallace, 24-VIII-1965, UV light (1 ♂, MEI 038855, NYSM; 1 ♀, MEI 038852, OSUC); Ramsey Canyon, L. D. Anderson, 21-VIII-1969 (1 ♀, MEI 038888, ANSP); Stump Canyon, Olson, 31-VII-1979, UV light (1 ♂, MEI 076939, UAIC); *Gila County,* Pinal Mountains, Sixshooter Canyon, 1,524 m (1 ♀, MEI 052156, USNM); *Graham County,* Graham Mountain, Noon Creek, F. G. Werner, 28-VII-1954, at light (1 ♂, MEI 038905, MEIC), G. D. Butler,

1-VIII-1957 (1 ♀, MEI 038913, SDGC); Noon Creek Camp, L. G. Bezark, G. M. Nishida, C. Kitayama, B. Tilden, 29-VIII-1975, UV light (1 ♂, MEI 041767, UCMC), Highway 266, L. G. Bezark, G. M. Nishida, C. Kitayama, B. Tilden, 29-VIII-1975 to 30-VIII-1975, UV light (1 ♀, MEI 041771, MEIC; 1 ♀, MEI 041772, NVDA); Pinaleño Mts., Hospital Flats, Mt. Graham, G. D. Butler, 15-VIII-1953 (1 ♀, MEI 076943, EMEC; 1 ♀, MEI 076928, KSUC); *Maricopa County,* 3.22 km W of Tortilla Flat, 505.968 m, Canyon Lake, J. LaSalle, S. Y. H. Lin, 22-VIII-1982, black light (1 ♀, MEI 043088, UCRC) ; *Pima County,* Baboquivari Mountains, Brown Canyon, F. G. Werner, W. Nutting, 4-VIII-1961, UV light (1 ♂, MEI 038884, UAIC; 1 ♀, MEI 038877, SDGC; 1 ♀, MEI 038879, DEIC); Santa Catalina Mountains, S. L. Wood, J. B. Karen, 9-VIII-1962, black light (1 ♀, MEI 037668, BYUC), Bear Canyon, 19.32 km HK Highway, F. G. Werner, W. Nutting, 26-VII-1961, light trap (1 ♀, MEI 038899, UAIC) , Molino Basin, 1,402.08 m, C. W. O'Brien, L. B. O'Brien, 4-IX-1965, black light (1 ♀, MEI 038814, SDGC), Sabino Basin, C. H. Townsend, 20-VIII (1 ♂, MEI 052157, USNM); Santa Rita Mountains, Box Canyon, R. F. Denno, 16-VIII-1970 (1 ♀, MEI 052224, UCDC), Madera Canyon, L. G. Bezark, G. M. Nishida, C. Kitayama, B. Tilden, 31-VIII-1975 (1 ♂, MEI 041769, ESUW), W. J. Hanson, 4-IX-1968 (1 ♂, MEI 070469, EMUS; 1 ♂, MEI 071469, CDFA), 1569.72 m, J. M. Sheppard, 8-VIII-1969, black light, oaks (1 ♀, MEI 052193, OSEC), N End Rosemont Area, 31°48–53′N, 110°42–47′W, 4,400–6,175′ El (6,000′), Anamax Mine Inventory 1975–1976, Wasp Cn. Sec. 31, J. Busacca and C. Olson, 8-28-1975, U V light (1 ♀, MEI 076921, UAIC); Santa Rita Res. Range, D. K. Faulkner, 5-VIII-1980 (1 ♂, MEI 052164, 1 ♀, MEI 052166, SDMC); *Pima and Santa Cruz Counties,* Santa Rita Mountains, E. L. Todd, 1-VIII-1941 (1 ♀, MEI 052221, SEMC), F. H. Parker, 12-VIII-1935 (1 ♀, MEI 052155, USNM), S. L. Szerlip, J. A. Powell, 13-VIII-1974, at light (1 ♂, MEI 052175, KSUC); *Santa Cruz County,* K. Roever, 3-VIII-1959, black light trap (1 ♀, MEI 038886, UAIC; 1 ♀, MEI 038887, IZAS); Canelo, G. D. Butler, 3-VIII-1965 (1 ♀, MEI 038901, BPBM); Canelo Hills, Parker Cyn, R. L. Westcott, 30-VII-1979 (1 ♂, MEI 079463, CNCI); Pena Blanca, Werner, Olson, 11-VIII-1983 (1 ♀, MEI 076929, UAIC); Sycamore Canyon, near Ruby, K. Roever, 2-VIII-1959, light trap (1 ♀, MEI 038876, UNAM; 1 ♀, MEI 038885, INBC; 1 ♀, MEI 038900, UNSM) V. L. Versterby, 6-IX-1963 (1 ♀, MEI 038880, MEIC); Patagonia Mountains, F. G. Werner, G. D. Butler, 8-VIII-1955, western slope (1 ♂, MEI 038867, SDGC), 9-VIII-1966, western slope (1 ♀, MEI 038918, MEIC), G. D. Butler, F. G. Werner, 9-VIII-1955, western slope (1 ♂, MEI 038906, QCAZ; 1 ♂, MEI 038907, ANSP; 1 ♂, MEI 038908, SDGC; 1 ♂, MEI 038914, UAIC; 1 ♂, MEI 038917, UNSM), Mount Washington, 1676.4 m, L. G. Bezark, R. A. Cunningham, D. E. Russell, 12-VIII-1991 to 13-VIII-1991, Hg vapor and UV blacklight (1 ♀, MEI 038115, WSUC); Pajarito Mountains, R. H. Arnett Jr., E. VanTassell, 6-VIII-1961 (1 ♀, MEI 038784, FSCA); Santa Rita Mountains, Madera Canyon, 3-VIII-1977 (1 ♂, MEI 052167, SDGC), A. J. Gilbert, N. J. Smith, 11-VIII-1981 (1 ♀, MEI 038119, SDGC; 1 ♀, MEI 038120, MEUC), D. K. Faulkner, 9-VIII-1978 to 20-VIII-1978 (1 ♀, MEI 052168, ZMAS), D. J. Knull, J. N. Knull, 1-VIII-1972 (1 ♀, MEI 052223, TAUI), D. K. Faulkner, 20-VIII-1979 (1 ♀, MEI 052165, BMNH), E. M. Fisher, 7-VIII-1962 to 9-VIII-1962 (1 ♀, MEI 030943, CMNH; 1 ♀, MEI 030929, CNCI; 1 ♀, MEI 031008, EMUS; 1 ♂, MEI 030942, KUIC), G. R. Ballmer, K. Brown, 31-VII-1965 (1 ♂, MEI 038860, 1 ♀, MEI 038859, MEIC; 1 ♀, MEI 038808, NHRM), L. G. Bezark, G. M. Nishida, C. Kitayama, B. Tilden, 24-VIII-1975, UV light (1 ♂, MEI 041768, NHRM; 1 ♂, MEI 041773, UMRM; 1 ♀, MEI 041770, MEIC), L. M. Martin, 14-VIII-

1949 (1 ♀, MEI 030936, MRSN), 15-VIII-1949 (1 ♂, MEI 030934, LACM; 1 ♀, MEI 030933, CNCI; 1 ♀, MEI 030935, UMSP), 16-VIII-1949 (1 ♂, MEI 030941, LACM), 31-VII-1947 (1 ♀, MEI 030939, INHS), M. A. Cazier, R. Schrammel, C. Vaurie, P. Vaurie, 13-VIII-1952 (1 ♀, MEI 038781, AMNH), P. H. Sullivan, 31-VIII-1970 (1 ♀, MEI 038856, KUIC), R. L. Westcott, 13-VIII-1964 (1 ♂, MEI 079570, WFBM; 1 ♀, MEI 079569, FSCA), W. A. McDonald, 17-VIII-1955 to 20-VIII-1955 (1 ♀, MEI 038902, LACM), 1,402.08 to 1,706.88 m, 4-VIII-1975 (1 ♂, MEI 076916, CICESE; 1 ♂, MEI 076918, FMNH; 2 ♂, MEI 076919, 076915, 1 ♀, MEI 076920, UAIC; 1 ♀, MEI 076940, ZMHB; 1 ♀, MEI 076917, EBCC; 1 ♀, MEI 076914, NHMW), 1,487.424 m, J. G. Franclemont, 20-VII-1959 (1 ♀, MEI 038810, CUIC), L. M. Martin, 20-VIII-1946 to 29-VIII-1946 (1 ♀, MEI 031062, EMEC; 1 ♀, MEI 030938, CNCI), V. L. Versterby, 8-IX-1963 (1 ♀, MEI 038894, QCAZ; 1 ♀, MEI 038895, MEIC), 12-VIII-1963 (1 ♂, MEI 038896, MUSM; 1 ♂, MEI 038897, ANIC; 1 ♂, MEI 038898, IZAV), 21-VII-1963 (1 ♂, MEI 038881, MHNG), 22-IX-1963 (1 ♀, MEI 038883, UMRM), 31-VII-1963 (1 ♂, MEI 038882, MEUC), 1,524 m, K. W. Brown, P. Petrulis, 3-IX-1971, UV light (1 ♂, MEI 033978, 1 ♀, MEI 033979, PMNH), 1,554.48 m, D. R. Davis, 10-VII-1964 to 26-VII-1964 (1 ♂, MEI 052152, SEMC; 1 ♀, MEI 052153, NMSA), Bog Springs, 1,706.88 m, E. Lindquist, 6-VIII-1973 (1 ♂, MEI 052231, CNCI); *County unknown,* Floricera, Sta Rita Mts., Olson, Burme, Frank, 30-VII-1980 (1 ♀, MEI 076938, UAIC); Garces, N. Banks, VIII (1 ♀, MEI 038864, MCZC) ; *New Mexico, Hidalgo County,* 1,645.92 m, Skeleton Canyon, G. R. Ballmer, 12-VIII-1965 (1 ♂, MEI 038892, USNM); 56.35 km E of Douglas, Arizona, C. W. Sabrosky, 22-IX-1965 (1 ♀, MEI 038857, USNM); Coronado National Forest, Peloncillo Mountains, 1.4 km W National Forest Boundary, Black C.C.C. Dam Road, NFR63, 1661.16 m, M. A. Metz, 28-VI-1997, malaise trap (2 ♂, MEI 103430, 103426, SDGC; 2 ♂, MEI 103431, 103432, MEIC; 1 ♂, MEI 103433, OSEC; 1 ♂, MEI 103427, ZMUC), 4.0 km W National Forest Boundary Black C.C.C. Dam Road, NFR63, 1,682.496 m, M. A. Metz, 28-VI-1997, malaise, 9 m Fock's (1 ♂, MEI 103428, INHS; 1 ♂, MEI 103429, ZMAS; 1 ♂, MEI 103424, TAUI; 1 ♂, MEI 103425, MNHN).

Diagnosis.—The scape in this species is setose, but most of the setae are short, with few longer ones. The lower frons bulges only slightly, with silver pruinescence laterally, extending down along parafacial. The face below the antenna also has silver pruinescence. In males, the notum is densely covered with erect and appressed pale or gold pile. In females, the notum and abdominal tergites are covered with short, fine, appressed brown and white pile. In the male genitalia, the setae of the epandrium and gonocoxites are orange. The subepandrial plate is attached to the epandrium at the posterolateral corners, and the sclerotized portion of the subepandrial plate is V-shaped posteriorly. The gonocoxites lack a suture along the midline separating the two lateral halves. The outer gonocoxal process is widened distally, with a small patch of setae on the dorsolateral surface. The ventral gonocoxal process of the gonocoxites is present, elongated and flattened; there are no clumped setae at its base. The base of the ventral lobes is U-shaped and broad between the two halves. The parameral sheath of the aedeagus is smooth dorsally. The ventral apodeme lacks a ventral keel. The distiphallus is swollen basally, and is recurved and parallel with the ventral apodeme at the tip. In the female terminalia, the furca is not notched posteriorly, and lacks a posterolateral peg. The anterolateral furcal prongs are separated by a distance subequal to the greatest width of the furca. The common spermathecal duct is broad basally, at half the width of the entire furca; the duct tapers quickly.

Fig. 2. Known distribution for *Ozodiceromyia livdahli.*

Autapomorphy.—Gonocoxal setae pale (character 26, state 0).

Distribution.—The known distribution for this species is found in Fig. 2. Most of the localities fall within an elevational range of 1,000–2,000 m, although 1 ♀ was collected near 500 m. The distribution encompasses parts of the following biogeographical regions: the Provincia Xerófila Mexicana, the northern part of the Provincia Mesoamericana de Montaña, and the montane regions of the southeastern quarter of Arizona and southwestern New Mexico.

Etymology.—Patronym for Todd P. Livdahl, professor of Biology at Clark University, Worcester, Massachusetts, *alma mater* of SDG; to be treated as a noun in apposition.

Biology.—This species is most active in July and August, with a range from the end of June (4 ♂♂) through September. This species seems to be commonly collected at UV and other light sources at night.

Ozodiceromyia mexicana Bigot
(Figs. 9–10, 16, 21, 25, 30–31, 34–35, 41)

Ozodiceromyia mexicana Bigot 1890: 321. Type locality: Mexico. Type: HT♀ in BMNH. Bigot 1890: 323 (key ref.); Kröber 1912: 211 (repr. orig. descr.), 1913: 8 (cat. cit.); Cole 1923: 19–20 (annot. listing); Gaimari 1998: 124–125 (lit. list), 157–159 (in phylogeny).

Ozodiceromya (sic) *mexicana*: Bigot 1890: 321 (orig. descr.); Irwin and Lyneborg 1981a: 196 (illust.: coxa), 199 (illust.: antenna), 254 (illust.: ♂ genit.), 257 (listing).

Ozodiceronyma (sic) *mexicana*: Godman 1901: 378 (listing).

Euphycus setosus Kröber 1912: 211. Type locality: Mexico. Type: LT♂ (designated herein) in NHMW. Irwin and Lyneborg 1981a: 257 (prop. syn.).

Ozodiceromya (sic) *setosa*: Irwin and Lyneborg 1981a: 257 (comb. change).

Female holotype.—The HT♀ is in poor condition, i.e., the abdomen and thorax are completely covered with orange fungus. Fortunately, the head is mounted separately and is fungus-free. The head is distinct enough to associate this specimen with a recognizable species. The following description deals only with the characteristics that can be seen in the specimen. Following this, the full redescription of the recognized

species comes from the LT♂ of the junior synonym, *Euphycus setosus* Kröber.

Body length: 7.1 mm.

Head: 1.13 mm long, 1.73 mm wide, 1.28 mm high. Distance between eyes at level of anterior ocellus 0.33 mm; at antennal level 1.01 mm; at genal level 0.96 mm. Scape 0.59 mm long, 0.12 mm wide; with long, fine and thick, black setae, evenly distributed over entire scape (including median surface). Pedicel 0.18 mm long, barrel-shaped, setose (including median surface). Antennal base to nearest edge of eye 0.20 mm. Frons bulging 0.17 mm beyond eye in lateral view. Parafacial lacking pile; silver pruinescence in thin line along edge of eye; face and parafacial otherwise glabrous, shiny black. Frons shiny black; lower frons globose and bulging to antennal insertion; upper frons distinct from lower frons, bulging. Genal pile short and black.

Legs: Foreleg dark brown, except foretibia paler and lacking setae on proximal, dorsal surface. Midleg dark brown, except midtibia orange basally.

Wing: 5.85 mm long.

Male.—Lectotype of *Euphycus setosus* Kröber, to represent the species *Ozodiceromyia mexicana.*

Body length: 6.9 mm.

Head (Fig. 9): 0.90 mm long, 1.59 mm wide, 1.35 mm high. Distance between eyes at antennal level 0.83 mm; at genal level 1.01 mm. Antenna dark brown. Scape 0.71 mm long, 0.18 mm wide; with long, fine and thick, black setae, evenly distributed over entire scape (including median surface). Pedicel 0.20 mm long, barrel-shaped, setose (including median surface). First flagellomere 0.60 mm long, 0.15 mm wide; with short setae covering basal two-thirds. Stylus 0.09 mm long, inserted subapically. Antennal base to nearest edge of eye 0.26 mm. Frons globose, bulging 0.18 mm beyond eye in lateral view. Parafacial lacking pile, with silver pruinescence only along eye edge; pruinescence extends dorsally in thin line along eye margin halfway up frons; face and parafacial otherwise glabrous, shiny black. Frons otherwise shiny black; with long, fine, black setae (up to 0.38 mm long); upper frons bare. Genal pile short, darkened. Palpal pile white basally, dark brown distally. Postgenal pile white; occipital pile black; occiput with silver pruinescence only along edge of eye, and with several black setae. Median occipital sclerite flattened; glabrous, shiny black; upper edge not rounded. Postocular setae black, arranged in single, transverse row. Ocellar tubercle shiny black, with fine, forward-directed, black setae.

Thorax: Scutum and scutellum with erect black pile sparsely interspersed with appressed gold pile. Scutum 2.08 mm long, 1.70 mm wide; ground color black; with silver-grey pruinescence dorsally, lacking pruinescence laterally; median vitta diffuse bronze; dc vittae absent; dc setae absent [or 1 pair present]. Scutellum with silver pruinescence, reduced pruinescence anteriorly. Halter yellow. Katatergite with dense, long, orange pile. Anepimeron, katepimeron, and meron lacking pile, and with reduced silver pruinescence, appearing as vertical brown stripe from wing base to between second and third coxae. Anepisternum with silver pruinescence, and with white pile. Katepisternum with silver pruinescence, with white pile only on vertical crest along middle of pleurite. Prepimeron with silver pruinescence, lacking pile.

Legs: Coxae with silver pruinescence, posterior surfaces less so. Posterior surface of hindcoxa with long, white pile (Fig. 16). Femora dark brown. Fore- and midfemora with appressed, scale-like, white pile, and with long, erect, recumbent, white and black pile. Hindfemur with appressed, scale-like brown and white pile. Tibiae with short, erect, black setae; proximal, dorsal surfaces with sparser setal covering, or nearly bare. Foretibia orange basally, becoming dark brown distally; clavate distally. Midtibia orange, becoming darkened at distal tip. Hindtibia orange basally, becoming dark brown distally. Foretarsus dark brown. Mid- and hindtarsi dark brown ex-

cept for basal two tarsomeres orange at their bases.

Wing: 6.24 mm long. Basal costal lobe with setae arranged in line along outer edge, extending into outer row of costal setae; second line of setae along base of basal costal lobe, extending into inner row of costal setae. Entire membrane slightly darkened; veins and membrane orange basally, brown distally.

Abdomen: Tergite 1 with erect and recumbent gold pile, except dark brown medioposteriorly; remaining tergites with erect and recumbent, white pile; dorsally, with silver pruinescence; laterally, lacking pruinescence (showing dark brown ground color), except tergite 1 and posterior edge of tergite 2 with silver pruinescence. Sternites with silver pruinescence only along anterior edge of sternite 2.

Terminalia (MEI 052240): Sternite 8 with black setae along posterior edge, which is emarginate medially. Tergite 8 dumbell-shaped, with black setae along posterior edge. Epandrium (Fig. 25) 0.24 mm long, 0.63 mm wide at widest point; orange; emarginate anteriorly; dorsal surface with white setae on posterior two-thirds; lateral edges parallel; posterolateral corners extended posteriorly. Subepandrial plate (Fig. 25) unattached to epandrium; sclerotized portion reduced, divided into two small plates. Sclerotized portion of cerci 0.23 mm long; extending posteriorly beyond posterolateral corners of epandrium; subequal in length to ventral epandrial sclerite. Gonocoxites (Figs. 30–31) 0.77 mm wide; orange; with white setae, up to 0.50 mm long; fusion 0.35 mm long at midline, with suture. Inner gonocoxal process flanged, knob with several white setae. Outer gonocoxal process flange-like, 0.23 mm long; bare. Gonocoxal apodeme entirely within anterior edge of gonocoxite; lacking sclerotized bridge to parameral sheath of phallus. Ventral gonocoxal process absent, lateral part of corresponding edge with dense patch of fine orange setae, up to 0.30 mm long. Ventral lobes distinct, fused basally by thin, transparent membrane. Gonostylus expanded ventrally into large lobe; with dorsobasal lobe; lacking subapical, lateral spur. Dorsal apodemes (Fig. 34) of aedeagus parallel; subequal in length to ventral apodeme; parameral sheath with distinct transverse wrinkles dorsally. Ventral apodeme thin, of uniform width; lacking ventral keel. Ejaculatory apodeme 0.35 mm long; stick-like, slightly expanded distally. Lateral ejaculatory process a complete ring dorsally, but notched; set into aedeagus; lightly sclerotized. Distiphallus long, recurved; distally parallel with ventral apodeme (Fig. 35).

Female (MEI 052163).—Similar to ♂ except as follows: body length 8.6 mm.

Head (Fig. 10): 1.10 mm long, 1.76 mm wide, 1.28 mm high. Distance between eyes at level of anterior ocellus 0.32 mm; at antennal level 0.83 mm; at genal level 0.95 mm. Scape 0.81 mm long, 0.15 mm wide. First flagellomere 0.71 mm long, 0.15 mm wide. Antennal base to nearest edge of eye 0.32 mm. Frons shiny black; lower frons globose and bulging to antennal insertion, with fine, black setae (up to 0.12 mm long) in patch above antennal base; upper frons bulging and distinct from lower frons.

Thorax: Scutum and scutellum with recumbent black pile and appressed gold pile. Scutum 2.08 mm long, 1.80 mm wide. Anepisternum with reduced silver pruinescence; pile of anepisternum and katepisternum sparse, short, white.

Wing: 6.12 mm long.

Abdomen: Tergites and sternites lacking pruinescence (showing dark brown ground color); tergites with appressed and semi-appressed gold pile.

Terminalia (paratype, MEI 070426) (Fig. 41): Furca 0.53 mm long, 0.38 mm wide; anterior edge not sclerotized; anterolateral prongs dorsoventrally flattened, separation subequal to greatest width of furca; posterolaterally with small, ventromedially oriented peg; posterior edge notched. Furcal bulla not sclerotized; posteriorly with indented cavity. Gonopore basal to furcal bul-

la, originating within posterior cavity. Common spermathecal duct 1.14 mm long. Spermathecal ducts originate from clean trifurcation at base of central sac duct; central sac duct absent. Central sac 0.89 mm long, 0.30 mm wide. Spermatheca 0.15 mm long, 0.15 mm wide; rounded distally, but basal edge flattened.

Type materials.—HOLOTYPE ♀: (MEI 103180) top label: Mexic[o]; with the following handwritten, second label (note, this is a standard provisional label of Bigot which he never updated): n. genus, Ozodiceromyia, J. Bigot, O. mexicana ♀, n. sp. Inedict. [= unedited, unpublished], Quincy 9b, 1888 J. Bigot, Mexique. This specimen, which is from BMNH, is in poor condition and is entirely covered with orange fungus, except for the head, which is mounted separately on the same pin.

LECTOTYPE ♂ (here designated to fix the current interpretation of this name and to ensure stability and uniformity in its future interpretation) of *Euphycus setosus*: (MEI 084117) with the following labels: Bilimek, Mexico, 1871, Guadalupe/Cotype (pink label)/Phycus setosus Kröb., det. Kröber 1911/Lectotypus ♂, Euphycus setosus Kröber, designated in 1998 by SD Gaimari et ME Irwin (red label). This pinned specimen is in very good condition, and is deposited in NHMW. PARALECTOTYPES: Bilimek, Mexico, 1871/Type (pink label)/Phycus setosus Kröb., det. Kröber 1911/Paralectotypus ♀, Euphycus setosus Kröber, designated in 1998 by SD Gaimari et ME Irwin (red label) (pinned ♀, MEI 084118, NHMW); Mexico/Cotype (pink label)/Phycus setosus Kröb., det. Kröber 1911/Paralectotypus ♂, Euphycus setosus Kröber, designated in 1998 by SD Gaimari et ME Irwin (red label) (2 pinned ♂♂, MEI 084115, 084116, NHMW); Type (pink label)/Mexico, Sta. Fe, 1871/Type No. 24183, U.S.N.M. (red label)/Euphycus setosus Kröb., Kröber det. 1911/Paratype only, det. WWirth/Ozodiceromyia mexicana Bigot, det WWirth/Paralectotypus ♂, Euphycus setosus Kröber, designated in 1998 by SD Gaimari et ME Irwin (red label) (pinned ♂, MEI 032957, USNM).

Materials examined.—MEXICO: *Coahuila,* 30.6 km SE of Saltillo, Highway 57, 2,194.56 m, C. O'Brien, L. O'Brien, G. Wibmer, 12-IX-1982 (1 ♀, MEI 052245, MCZC); *Distrito Federal,* IX-1898 (2 ♀, MEI 032959, 032960, USNM); Mexico City, R. Muller (1 ♂, MEI 032958, USNM), W. G. Downs, 14-X-1951 (♂ and ♀, MEI 038775, 038774, AMNH); Pedregal de San Angel, H. Perez, 27-IX-1969 (1 ♀, MEI 084201, KSUC); Tizapan (1 ♀, MEI 052178, AMNH; 2 ♂, MEI 084194, 084195, UNAM); *Guerrero,* 12.9 km E of Taxco, 1,828.8 m, R. H. Painter, E. M. Painter, 15-IX-1963 (1 ♂, MEI 052188, UAIC); 22 km NE Telolopan, 1,530 m, J. A. Powell, J. A. Chemsak, 16-IX-1982 (1 ♀, MEI 081567, EMEC); *Hidalgo,* 16.1 km S of Zimapán, 1,889.76 m, J. A. Powell, 28-IX-1975 (1 ♂, MEI 052247, SDGC); Tepeapulco, G. E. Bohart, W. J. Hanson, 18-IX-1974 (1 ♂, MEI 007797, EMUS; 1 ♂, MEI 007795, FSCA; 1 ♂, MEI 007796, UAIC; 1 ♀, MEI 007798, EBCC); *Jalisco,* 6.4 km W Mazamilta, 2,072.64 m, R. E. Smith, 16-X-1950 (1 ♀, MEI 052182, ZMHB); *Mexico,* C. W. Johnson coll. (1 ♂, MEI 032961, USNM; 1 ♂, MEI 052180, MCZC); Amecameca, R. Dreisbach, K. Dreisbach, 25-IX-1957 (1 ♂, MEI 052192, MEIC; 1 ♀, MEI 052181, INHS); 45.1 km SE of San Juan del Rio, G. E. Bohart, W. J. Hanson, 31-VIII-1974 (1 ♂, MEI 007800, EMUS); *Michoacán,* 4.8 km W of Morelia, 1,859.28 m, R. H. Painter, E. M. Painter, 21-X-1963 (1 ♂, MEI 052185, KUIC), 1,950.72 m, R. H. Painter, E. M. Painter, 20-IX-1963 (1 ♂, MEI 052190, KUIC; 1 ♂, MEI 052191, FSCA; 1 ♀, MEI 090233, SDGC); 6 km S of Ocampo, Lag.[una] Verde, A. L. Norrbom, 6-X-1991, observed waving forelegs acting like a wasp (1 ♀, MEI 052163, USNM); 11.3 km E of Quiroga, 2,346.96 m, R. H. Painter, E. M. Painter, 21-IX-1963 (1 ♂, MEI 052176, KSUC); 14.5 km W of Ciudad Hidalgo, 2,194.56 m, R. H. Painter, E. M. Painter,

19-IX-1963 (1 ♀, MEI 052177, KSUC); 14.5 km W of Morelia, 2,072.64 m, J. A. Powell, J. A. Chemsak, T. Eichlin, T. P. Friedlander, 9-X-1975 (3 ♂, MEI 052236, 052238, 052239, CASC; 1 ♂, MEI 052237, ZMAS); 20.9 km N of Morelia, 1,981.2 m,, R. H. Painter, E. M. Painter, 22-IX-1963 (1 ♀, MEI 107043, MEIC); N of Patzcuaro, 3 km E of Zintzuntzan, 2,100 m, T. Griswold, 26-X-1987 (1 ♀, MEI 052229, EMUS); SW of Patzcuaro, 3 km E of Zirahuén, 2,000 m, T. Griswold, 27-X-1987 (1 ♂, MEI 052227, WFBM; 1 ♀, MEI 052228, EMUS); *Morelos,* 19 km E Cuernavaca, Canyon del Lobo, E. M. Fisher, 15-X-1986 (6 ♂, MEI 070420, 070421, 070423, 070424, 070425, 070427, 1 ♀, MEI 070419, CDFA; 1 ♂, MEI 070422, 1 ♀, MEI 070428, SDGC; 1 ♂, MEI 070429, ZMUC; 1 ♂, MEI 070430, MNHN; 1 ♂, MEI 070431, INHS; 1 ♀, MEI 070426, MEIC; 1 ♀, MEI 070432, CNCI); Cañón del Lobos, M. Rodriguez, 19-X-1985 (1 ♂, MEI 084184, CICESE); Tepoztlán, 1,700 m, C. D. Michener, R. Murillo, J. M. Labougle, 13-XI-1980 (1 ♂, MEI 052220, SEMC); *Nuevo León,* 4.8 km E of Galeana Jct., 1,828.8 m, J. A. Chemsak, J. Powell, A. Michelbacher, M. M. Michelbacher, 15-IX-1976 (1 ♂, MEI 081532, EMEC; 1 ♀, MEI 081530, NHMW; 1 ♀, MEI 081531, SDGC); 6.4 km W Iturbide, 1,676.4 m, J. A. Chemsak, 22-IX-1976, at light (1 ♂, MEI 052240, MEIC; 1 ♀, MEI 052241, CASC), J. A. Chemsak, J. A. Powell, 13-IX-1976 to 14-IX-1976, at light (1 ♂, MEI 052197, EMEC); 8.1 km E of Galeana Jct., J. A. Powell, J. A. Chemsak, 16-IX-1976 to 17-IX-1976 (1 ♂, MEI 052202, MNHN; 1 ♂, MEI 052204, AMNH; 1 ♂, MEI 052205, SEMC; 1 ♂, MEI 052206, BMNH), J. A. Powell, J. A. Chemsak, A. E. Michelbacher, M. M. Michelbacher, 16-IX-1976 to 17-IX-1976 (10 ♂, MEI 052196, 052199, 052200, 081551, 081550, 081549, 081548, 081547, 081538, 081537, 1 ♀, MEI 081539, EMEC; 1 ♂, MEI 052201, UCRC; 1 ♂, MEI 052198, EBCC; 1 ♀, MEI 081536, ZMUC); 11.3 km W of Iturbe, 1,767.84 m, R. H. Painter, E. M. Painter, 25-IX-1963 (1 ♂, MEI 052187, KSUC); 14.5 km S of junction 60 to Dr. Arroyo, R. Turnbow, 22-X-1979 (1 ♂, MEI 052174, UGCA); 16.1 km E of San Roberto, 2,133.6 m, 15-IX-1976 (1 ♂, MEI 052203, MZSP); 16.1 km NW Provedencia, 1828.8 m, J. A. Chemsak, J. Powell, A. Michelbacher, M. Michelbacher, 27-IX-1976 (♂ and ♀ *in copula,* MEI 081553, 081552, EMEC); 16.1 km N Provedencia, J. Powell, J. A. Chemsak, A. Michelbacher, M. M. Michelbacher, 25-IX-1976 (1 ♂, MEI 081534, EMEC); 22.5 km N San Juanito, 2,194.56 m, J. A. Chemsak, J. Powell, A. Michelbacher, M. M. Michelbacher, 22-IX-1976 (2 ♂, MEI 081528, 081529, EMEC); 66 km S of Saltillo, 1,889.76 m, 7-IX-1962, U. Kans. Mex. Exped., on flowers of *Encelia farinosa* (2 ♂, MEI 052184, 052186, KSUC); 66 km SE of Saltillo, 1,889.76 m, N. Marston, 7-IX-1962 (1 ♂, MEI 052184, KSUC); 70.8 km SE of Saltillo, G. E. Bohart, W. J. Hanson, 30-VIII-1974 (1 ♂, MEI 007803, EMUS); *probably Nuevo León,* Guadalupe, [D.] Bilimek, 1871 (1 ♂, 109316, NHMW); *Oaxaca,* 11.3 km SE of Nochixtlan, 2,133.6 m, J. A. Powell, J. A. Chemsak, T. Eichlin, T. P. Friedlander, 7-X-1975 (2 ♂, MEI 052242, 052243, CASC; 1 ♂, MEI 052244, DEIC; 1 ♀, MEI 052235, MZSP); 14.5 km NE San Jose del Estado, 2,590.8 m, R. F. Smith, 25-X-1966 (1 ♂, MEI 081533, EMEC); *San Luis Potosi,* 31 km SE San Luis Potosi, 2,250 m, E. Ramírez, 17-X-1996 (1 ♂, MEI 103423, NHMW; 1 ♂, MEI 103422, EBCC; 1 ♂, MEI 103420, ZMHB; 1 ♂, MEI 103419, UCRC), 18-X-1996 (1 ♂, MEI 103403, SDGC; 1 ♂, MEI 103421, CNCI); *Veracruz,* Perote, San Juan del Monte, A. Cordoba, 14-X-1989 to 15-X-1989 (1 ♂, MEI 080258, 1 ♀, MEI 080259, IEXA; 1 ♀, MEI 080260, BMNH); *Zacatecas,* 3.2 km S of Luis Moya, 1,920.24 m, R. H. Painter, E. M. Painter, 3-IX-1962 (1 ♂, MEI 052189, INBC); (*unknown state*), Carr. la para cuautla km 2; 15 Nov. 1978, coll: E. Olvara (1 ♂, MEI 084199, UCDC;

1 ♂, MEI 084202, UNAM), 19 Nov. 1978 (1 ♂, MEI 084200, DEIC); Cuamauaca moz, km 57.5 Autopista, 15 Nov. 1978, J. C. Medina (1 ♂, MEI 084188, UCDC); San Lucas PUZ., Matorrol espinoso [= spiny bush], 21-IX-89, A. Exuihua M. (1 ♀, MEI 079915, UNAM).

Diagnosis.—The scape in this species is densely setose, with long setae. The lower frons is globose and distinctly bulging, is shiny black, lacking pruinescence, and has only a thin line of silver pruinescence along the eye margin extending down along the parafacial. The face below the antenna is shiny black, lacking pruinescence. In males, the notum is covered with erect black pile interspersed with appressed gold pile. In females, the notum and abdominal tergites are covered with short, fine, appressed gold pile. In the male genitalia, the setae of the epandrium and gonocoxites are orange. The subepandrial plate is attached to the epandrium only through a thinly membranous connection laterally. The sclerotized portion of the subepandrial plate is not V-shaped posteriorly, but is reduced to two smaller lateral plates. The gonocoxites have a suture along the midline separating the two lateral halves. The outer gonocoxal process tapers evenly towards apex and is bare of setae. The ventral gonocoxal process of the gonocoxites is absent; there is a distinct, dense clump of orange setae on the posteroventral edge of the gonocoxite. The base of the ventral lobes is V-shaped and narrow between the two halves. The parameral sheath of the aedeagus has distinct, transverse wrinkles dorsally. The ventral apodeme lacks a ventral keel. The distiphallus is evenly tapered to apex, lacking any swelling, and is recurved and parallel with the ventral apodeme at the tip. In the female terminalia, the furca is notched posteriorly, and ventromedially oriented pegs are present on the posterolateral portion of furca. The anterolateral furcal prongs are separated by a distance subequal to the greatest width of the furca. The common spermathecal duct is not widened basally, and tapers normally.

Autapomorphies.—Lower frons globose and bulging to antennal insertion (character 9), posterolateral surface of hindcoxa pilose (character 14), parameral sheath with transverse wrinkless dorsally (character 17), subepandrial plate attached to epandrium laterally only (character 24), posterolateral corners of epandrium held by separate, sclerotized membrane, (character 25), presence of distinct internal keel where gonocoxites fused (character 27), posterior edge of furca with distinct notch (character 36), medially directed peg present on posterolateral furcal margin (character 37).

Distribution.—The known distribution for this species is found in Fig. 3. Nearly all of the specimens were collected at elevations ranging from 1,500–2,600 m. The distribution encompasses parts of the following biogeographical regions: the Provincia Xerófila Mexicana, and the Provincia Mesoamericana de Montaña.

Biology.—This species is most active in September and October, with several specimens collected in late August and in the middle of November. Two males were collected on flowers of *Encelia farinosa* A. Gray (Asteraceae), and one female was observed in life waving her forelegs in apparent mimicry of the antennae of a sphecoid wasp.

Ozodiceromyia parargentifera Gaimari and Irwin, new species

(Figs. 36–37, 40)

Male.—*Body length:* 7.0 mm.

Head: 1.04 mm long, 2.00 mm wide, 1.58 mm high. Distance between eyes at antennal level 0.62 mm; at genal level 0.83 mm. Antenna brown, except basal half of scape orange. Scape 0.95 mm long, 0.15 mm wide; with short, fine, black setae, evenly distributed over entire scape (including median surface), and few larger setae. Pedicel 0.18 mm long, barrel-shaped, setose (including median surface). First flagellomere 0.96 mm long, 0.15 mm wide; with

Fig. 3. Known distribution for *Ozodiceromyia mexicana.*

short setae covering basal two-thirds. Stylus 0.09 mm long, inserted subapically. Antennal base to nearest edge of eye 0.15 mm. Frons bulging 0.09 mm beyond eye in lateral view. Face below antenna with silver pruinescence. Parafacial lacking pile, with silver pruinescence extending to antennal base and dorsally along eye margin halfway up frons. Frons otherwise shiny black; with few, short, fine, black setae (up to 0.17 mm long) dorsolateral to antennal base; remainder of frons bare. Genal pile short, darkened. Palpal pile white basally, dark brown distally. Postgenal and occipital pile white; occiput with silver pruinescence only along edge of eye, and with several black setae. Median occipital sclerite flattened; glabrous, shiny black; upper edge not rounded. Postocular setae black, arranged in single, transverse row. Ocellar tubercle with silver pruinescence, and fine, forward-directed, black setae.

Thorax: Scutum and scutellum with fine, erect black pile. Scutum 2.22 mm long, 1.53 mm wide; ground color black; with silver-grey pruinescence dorsally, lacking pruinescence laterally; median vitta diffuse bronze; dc vittae absent; 1 pair dc setae. Scutellum with silver pruinescence, reduced pruinescence anteriorly. Halter brown. Katatergite with dense, long, white pile. Anepimeron, katepimeron, and meron lacking pile, and with reduced silver pruinescence, appearing as vertical brown stripe from wing base to between second and third coxae. Anepisternum with silver pruinescence, and with white pile. Katepisternum with silver pruinescence, with white pile only on vertical crest along middle of pleurite. Prepimeron with silver pruinescence, lacking pile.

Legs: Coxae with silver pruinescence, posterior surfaces less so. Posterior surface of hindcoxa lacking pile. Forefemur dark brown; dorsally with appressed, scale-like white pile, and erect, white and brown pile. Foretibia with short, erect, black setae; proximal, dorsal surface with sparser setal covering; orange on basal half, becoming dark brown distally; clavate distally. Foretarsus dark brown. Mid- and hindlegs broken off.

Wing: 5.88 mm long. Basal costal lobe with setae arranged in line along outer edge, extending into outer row of costal setae; second line of setae along base of basal

costal lobe, extending into inner row of costal setae. Entire membrane slightly darkened; veins and membrane orange basally, darker distally.

Abdomen: Tergites with erect and recumbent, white pile; dorsally, with silver pruinescence; laterally, lacking pruinescence (showing dark brown ground color), except tergite 1 and posterior edges of basal tergites with silver pruinescence. Sternites with silver pruinescence only along anterior edge of sternite 2.

Terminalia: Sternite 8 with fine black setae restricted to posterior edge, which is emarginate medially. Tergite 8 dumbell-shaped, with fine black setae restricted to posterior edge. Epandrium 0.18 mm long, 0.68 mm wide at widest point; orange; emarginate anteriorly; dorsal surface with black setae on posterior half; lateral edges parallel; posterolateral corners extended and pointed posteriorly. Subepandrial plate attached to posterolateral and posterior edges; sclerotized portion V-shaped posteriorly. Sclerotized portion of cerci 0.20 mm long; extending posteriorly slightly beyond posterolateral corners of epandrium; subequal in length to ventral epandrial sclerite. Gonocoxites 0.72 mm wide; orange; with black setae, up to 0.47 mm long; fusion 0.36 mm long at midline, lacking suture. Inner gonocoxal process flanged; knob with several black setae. Outer gonocoxal process flange-like, 0.33 mm long; with short, fine setae along dorsal edge. Gonocoxal apodeme entirely within anterior edge of gonocoxite; lacking sclerotized bridge to parameral sheath of phallus. Ventral gonocoxal process 0.27 mm long, flanged; bare. Ventral lobes distinct, fused basally by thin, transparent membrane. Gonostylus expanded ventrally into large lobe; with dorsobasal lobe; with subapical, lateral spur. Dorsal apodemes (Fig. 36) of aedeagus parallel; shorter than ventral apodeme; parameral sheath smooth dorsally. Ventral apodeme uniformly wide; with ventral, longitudinal keel. Ejaculatory apodeme 0.30 mm long; stick-like, expanded distally and bilobed. Lateral ejaculatory process a complete ring dorsally, but notched; set into aedeagus; lightly sclerotized. Distiphallus swollen basally, long, undulating, recurved; distally perpendicular to ventral apodeme (Fig. 37).

Female.—Similar to ♂ except as follows: body length 9.6 mm.

Head: 1.22 mm long, 2.28 mm wide, 1.59 mm high. Distance between eyes at level of anterior ocellus 0.50 mm; at antennal level 0.95 mm; at genal level 1.04 mm. Antenna brown. Antennal base to nearest edge of eye 0.30 mm. Parafacial pruinescence ends at antennal level. Frons shiny black; lower frons bulging, with short, fine, black setae (up to 0.09 mm long) dorsolateral to antennal base; upper frons bulging and wrinkled, distinct from lower frons. Median occipital sclerite and upper edge rounded; transverse row of black setae across median occipital sclerite in addition to row of postocular setae.

Thorax: Scutum and scutellum with erect and recumbent, short, black pile [one paratype also has short, fine, appressed gold pile]. Scutum 2.58 mm long, 1.76 mm wide. Pile of anepisternum and katepisternum short, white; densest on upper half of anepisternum.

Legs: Foretibia dark brown [or orange basally]. Mid- and hindfemora dark brown. Mid- and hindtibiae light brown. Mid- and hindtarsi dark brown, except for basal two tarsomeres mostly orange.

Wing: 7.20 mm long.

Abdomen: Tergites with short, recumbent, white pile. Tergites and sternites with reduced silver pruinescence (showing dark brown ground color), except posterolateral edges of basal tergites with silver pruinescence.

Terminalia (paratype, MEI 027022): Furca (Fig. 40) 0.53 mm long, 0.32 mm wide; anterior edge not sclerotized; anterolateral prongs dorsoventrally flattened, separation narrower than greatest width of furca. Furcal bulla not sclerotized; posteriorly with indented cavity. Gonopore basal to furcal bulla, originating within posterior

cavity. Common spermathecal duct basally 0.11 mm wide, tapering to 0.05 mm within 0.33 mm distance from gonopore; 0.62 mm long. Spermathecal ducts originate from clean trifurcation with central sac duct; central sac duct wider in basal diameter than spermathecal ducts. Central sac duct 0.45 mm long. Central sac 0.68 mm long, 0.41 mm wide. Spermatheca 0.17 mm in diameter; rounded, but basal edge slightly flattened.

Type materials.—HOLOTYPE ♂ (MEI 027017) with the following label: MEXICO, *Guerrero,* 4 mi. W of Chilpancingo, July 15, 1984, Carroll, Schaffner, Friedlander. This pinned specimen, which is deposited in CASC (with permission of TAMU), is in good condition except for its missing mid- and hindlegs.

Materials examined.—PARATYPES. MEXICO: same label as holotype (1 ♀, MEI 027022, SDGC); *Michoacán,* 9.3 km SE Quiroga, 25-VIII-1991, W. F. Barr, on roadside vegetation, 2,653 m (1 ♀, MEI 079906, WFBM); *Puebla,* 4.4 mi. SW [San Francisco] Acatepec, 9-VII-1981, Bogar, Schaffner, Friedlander (allotype ♀, MEI 027003, TAMU).

Diagnosis.—This species is much like *Ozodiceromyia argentifera* and *Ozodiceromyia livdahli.* The scape in this species is setose, but most of the setae are short, with few longer ones. The lower frons bulges only slightly, with silver pruinescence laterally, extending down along parafacial. The face below the antenna also has silver pruinescence. In males, the notum has some fine, erect, black setae (the holotype, the only known male, appears rubbed dorsally, and so presence or condition of appressed pile is unknown). In females, the notum has short, fine, erect and appressed black pile, and occasionally appressed gold pile. In the male genitalia, the setae of the epandrium and gonocoxites are black. The subepandrial plate is attached to the epandrium at the posterolateral corners, and the sclerotized portion of the subepandrial plate is V-shaped posteriorly. The gonocoxites lack a suture along the midline separating the two lateral halves. The outer gonocoxal process is widened distally, with a small patch of setae on the dorsolateral surface. The ventral gonocoxal process of the gonocoxites is present, elongated and flattened; there are no clumped setae at its base. The base of the ventral lobes is U-shaped and broad between the two halves. The parameral sheath of the aedeagus is smooth dorsally. The ventral apodeme has a ventral keel. The distiphallus is swollen basally, and is perpendicular to the ventral apodeme throughout. In the female terminalia, the furca is not notched posteriorly, and lacks a posterolateral peg. The anterolateral furcal prongs are separated by a distance narrower than the greatest width of the furca. The common spermathecal duct is broad basally, at half the width of the entire furca; the duct tapers quickly.

Autapomorphies.—Halter brown (character 15), ventral apodeme longer than dorsal apodemes (character 18), ventral surface of ventral apodeme with longitudinal keel (character 19), distiphallus perpendicular to dorsal apodemes (character 23, state 0), anterior prongs of furca narrowly separated (character 38).

Distribution.—The known distribution for this species is found in Fig. 4. This species is found in southern Mexico, in the states of Puebla, Michoacan, and Guerrero. The type locality, in Guerrero, is part of the northern slope foothills of the Sierra Madre de Sur range, at an elevation over 1,500 m. The remaining localities are all above this elevation, as high as 2,600 m. The distribution encompasses parts of the following biogeographical regions: the Provincia Mesoamericana de Montaña, and the Provincia Pacifica.

Etymology.—Gr., *para*: beside, near + "*argentifera,*" referring to the similarity with *Ozodiceromyia argentifera* (Kröber); to be treated as a noun in apposition.

Biology.—Adults are active at least through the months of July and August.

Fig. 4. Known distribution for *Ozodiceromyia parargentifera.*

Key to Species

A comprehensive key to species of *Ozodiceromyia* is not presented herein. This will be included in the larger revision of the entire genus in progress by the authors. The current key is a continuation of Gaimari and Irwin's (2000) key to world genera of Cyclotelini. An alternative is the key to the therevid genera of North America found in Irwin and Lyneborg (1981a, b). The first couplet below separates members of the *Ozodiceromyia mexicana*-group from all other members of the genus. Note that the male genitalic characters in the key are usually visible without dissection. The female genitalic character in couplet 3 requires dissection, but should not be necessary for routine identification.

1. Antenna (Figs. 7–10) longer than head. Scape setose throughout. Pedicel barrel-shaped, longer than wide, setose throughout. First flagellomere setose over basal two-

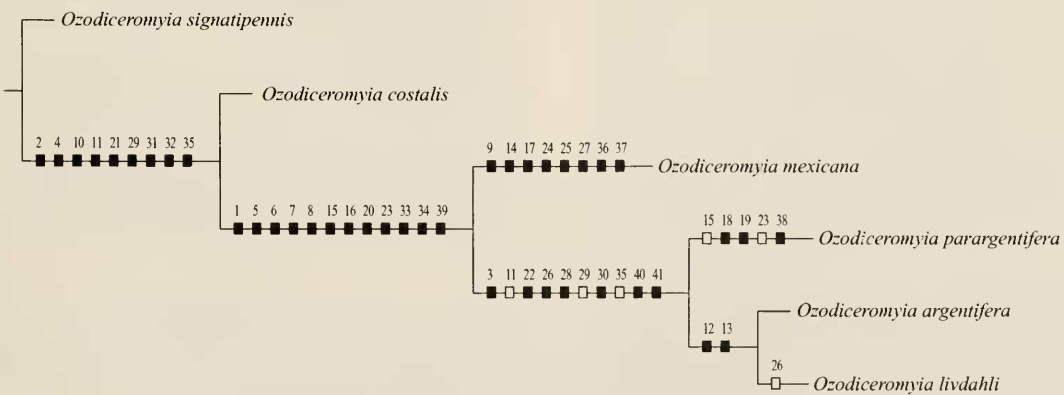


Fig. 5. Single most parsimonious cladogram for the species of the *Ozodiceromyia mexicana*-group, showing character state changes under ACCTRAN character optimization. Characters are numbered as in the text; hash marks are as follows: black = forward change with no homoplasy; white = change with homoplasy.

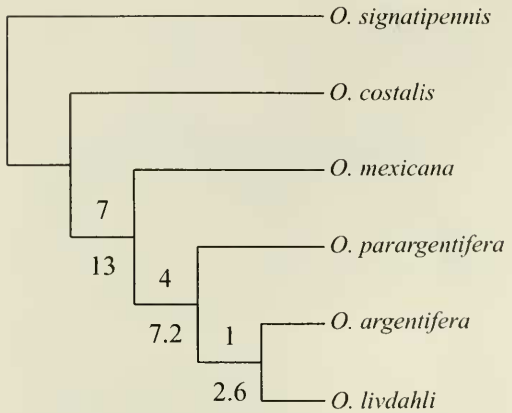


Fig. 6. Single most parsimonious cladogram for the species of the *Ozodiceromyia mexicana*-group, with Bremer support indices indicated above each branch and post-successively reweighted, rescaled Bremer support indices below each branch.

thirds. Wing membrane and veins orange, at least basally; distal third of wing often darkened, with darkened veins . . . . . *Ozodiceromyia mexicana*-group

– Antenna (Fig. 11) shorter than head, rarely as long as head. Scape usually bare on median surface. Pedicel as long as wide, usually bare on median surface. First flagellomere setose at most in basal third. Wing membranes hyaline or banded, but never orange; veins dark, rarely orange; distal third of wing not darkened relative to basal two-thirds . . . . . other *Ozodiceromyia*

2(1). Scape densely setose, with long setae, longer than those of first flagellomere (Figs. 9–10). Lower frons globose, distinctly bulging, and shiny black, with silver pruinescence only along eye margin (Figs. 9–10). Face beneath antenna shiny black, lacking pruinescence (Figs. 9–10). Male: notum with erect black pile; posterior surface of hindcoxa with long, white pile (Fig. 16); outer gonocoxal process tapering evenly, bare (Fig. 31); ventral gonocoxal process of genitalia absent, dense clump of orange setae on corresponding edge (Fig. 30) . . . . . *Ozodiceromyia mexicana*

– Scape setose, but with short setae, with few long setae interspersed (Figs. 7–8). Lower frons not globose, only slightly bulging; silver pruinescence present dorsolaterally to antennal base (Figs. 7–8). Face beneath antenna with silver pruinescence (Figs. 7–8). Male: pile of notum variable, but usually both erect and appressed pile present; posterior surface of hindcoxa lacking pile (Fig. 14); outer gonocoxal process widened distally, with small patch of short setae on dorsolateral surface (Fig. 27); ventral gonocoxal process present, long and flattened, with no densely clumped setae (Fig. 26) 3

3(2). Halter brown in both sexes. Male: notum with erect black pile; setae of gonocoxites and epandrium black; distiphallus perpendicular to ventral apodeme throughout length (Fig. 37). Female: distance between anterolateral furcal prongs distinctly narrowed anteriorly (Fig. 40) . . . . . *Ozodiceromyia parargentifera*

– Halter yellow in both sexes. Male: notum with both erect and appressed pale or gold pile; setae of gonocoxites and epandrium black or orange; distiphallus recurved before apex to become parallel with ventral apodeme (Fig. 33). Female: distance between anterolateral furcal prongs not narrowed anteriorly, subequal to widest part of furca (Fig. 39) 4

4(3). Male: setae of gonocoxites and epandrium black (Figs. 23, 26–27). Female: appressed pile on abdominal tergites gold . . . . . *Ozodiceromyia argentifera*

– Male: setae of gonocoxites and epandrium pale or orange (Fig. 28). Female: appressed pile on abdominal tergites brown and white . . . . . *Ozodiceromyia livdahli*

Character Descriptions

This section is devoted to description of morphology and taxon distribution of states of the 41 characters used in this analysis. Of these, 11 are taken from the head, 5 from the thorax, 19 from the male terminalia, and 6 from the female terminalia. Characters described and discussed by Gaimari and Irwin (2000) are referred to the appropriate character number therein for description, although state distributions are discussed herein. All characters are binary. Character distributions are discussed relative to the presented cladogram (Fig. 5).

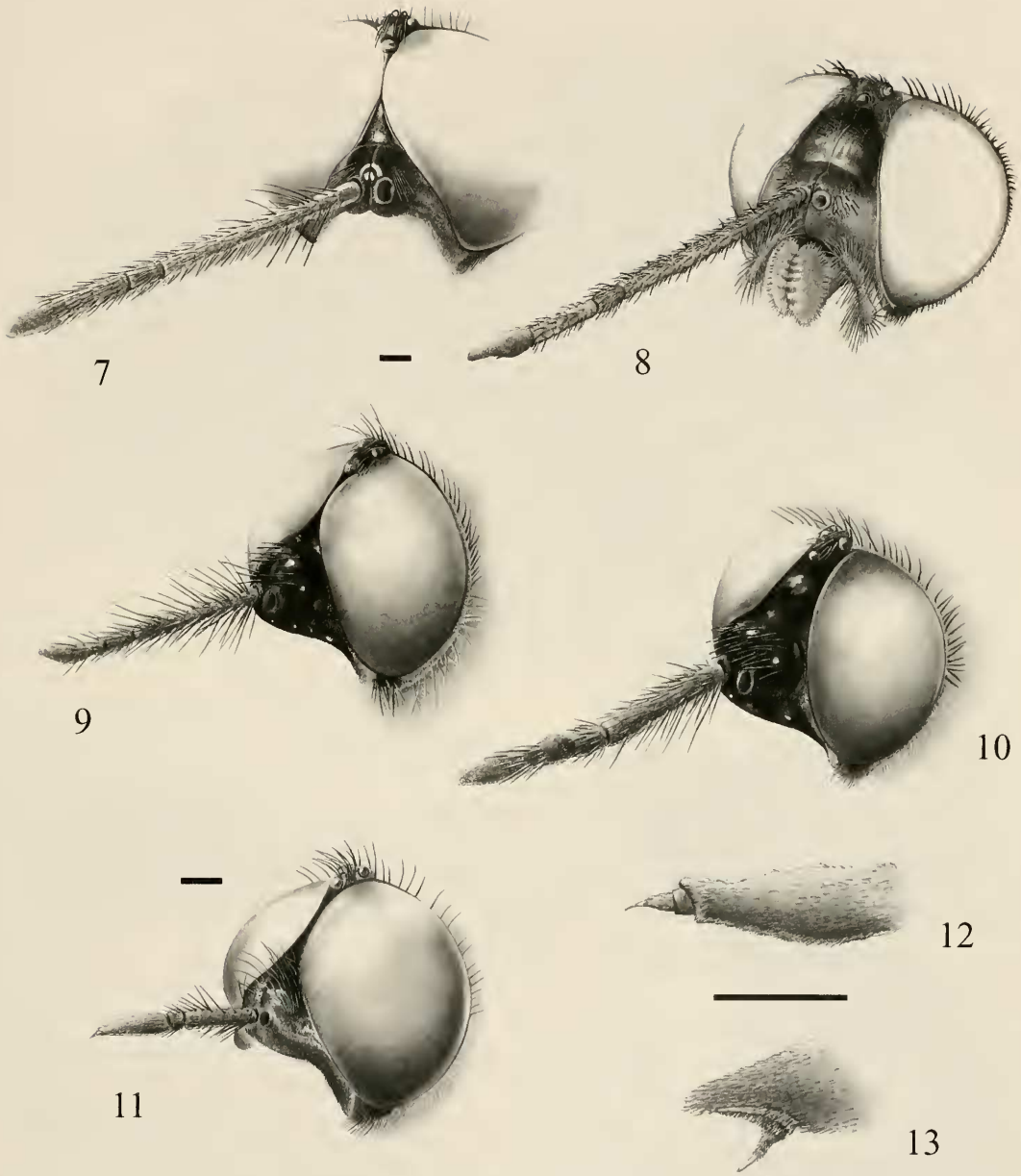
Head

1. Antennal length

0 shorter than or subequal to head length

1 longer than head

The states for this character are described as character 1 in Gaimari and Irwin (2000).



Figs. 7–13. Heads, ♂ (7, 9, 11), ♀ (8, 10); ♀, antennal first flagellomere (12), tip only (13). (7–8) *Ozodiceromyia argentifera* (MEI 038790, 052183). (9–10, 13) *Ozodiceromyia mexicana* (MEI 052192, 107043, 070426). (11–12) *Ozodiceromyia signatipennis* (MEI 044750, 056973). Measure bars, 0.2 mm.

In the current analysis, an elongated antenna (Fig. 7) is autapomorphic for the *mexicana*-group, and is found in no other known *Ozodiceromyia*. Members of several other cycloteline genera, including *Cyclotelus* Walker, also share this state.

2. Medial surface of scape

0 without setae
1 setose

In nearly all *Ozodiceromyia,* the scape is bare on the median surface (Fig. 11). Only

in the *mexicana*-group and the outgroup taxon *Ozodiceromyia costalis* (and several undescribed, putatively related species) is this surface setose (Fig. 9).

3. Setae of scape

0 longer than those of first flagellomere
1 most are shorter than or equal to those of first flagellomere

The setae of the scape are longer than those of the first flagellomere (Fig. 9), plesiomorphically, as in both outgroup taxa and *Ozodiceromyia mexicana.* As a synapomorphy for the clade of *Ozodiceromyia parargentifera* + *Ozodiceromyia argentifera* + *Ozodiceromyia livdahli,* the setae of the scape are shorter than or equal to those of the first flagellomere, at most with several longer setae interspersed among the short setae (Fig. 7).

4. Medial surface of pedicel

0 without setae
1 setose

The states for this character are described as character 3 in Gaimari and Irwin (2000). The apomorphically setose medial surface of the pedicel (Fig. 9) is present in all members of the *mexicana*-group, and in the outgroup taxon *Ozodiceromyia costalis.*

5. Setae of first flagellomere

0 basal only, or bare
1 covering more than basal half

In nearly all *Ozodiceromyia,* including both outgroup taxa, the setae of the first flagellomere are restricted to the base (Fig. 11). Only as an autapomorphy for the *mexicana*-group do these setae cover more than the basal half of the first flagellomere (Fig. 9).

6. Setae of first flagellomere

0 less dense ventrally, or bare
1 fully surrounding with equal density

Plesiomorphically, the ventral surace of the first flagellomere is bare, or only sparsely setose (Fig. 11), as in nearly all *Ozodiceromyia* including both outgroup taxa. Only as an autapomorphy for the *mexicana*-group do setae fully surround the first flagellomere with equal density (Fig. 9).

7. Antennal style

0 originates near tip, but extended beyond first flagellomere distally
1 distinctly subapical, and not extended beyond tip of first flagellomere

Plesiomorphically, the antennal style originates very close to the apex of the first flagellomere, but slightly subapical and ventral. Despite this, the tip of the style extends distally beyond the tip of the first flagellomere (Fig. 12). As an autapomorphy for the *mexicana*-group, the antennal style originates distinctly subapically on the first flagellomere within a ventral pit, with the stylar tip not reaching the apex of the first flagellomere (Fig. 13).

8. First stylar segment

0 as long as wide
1 wider than long, and ring-like

Plesiomorphically, the first stylar segment is as long as wide (Fig. 12). As an autapomorphy for the *mexicana*-group, this segment is reduced to a small, flattened ring set within a ventral pit (Fig. 13).

9. Lower frons at antennal insertion

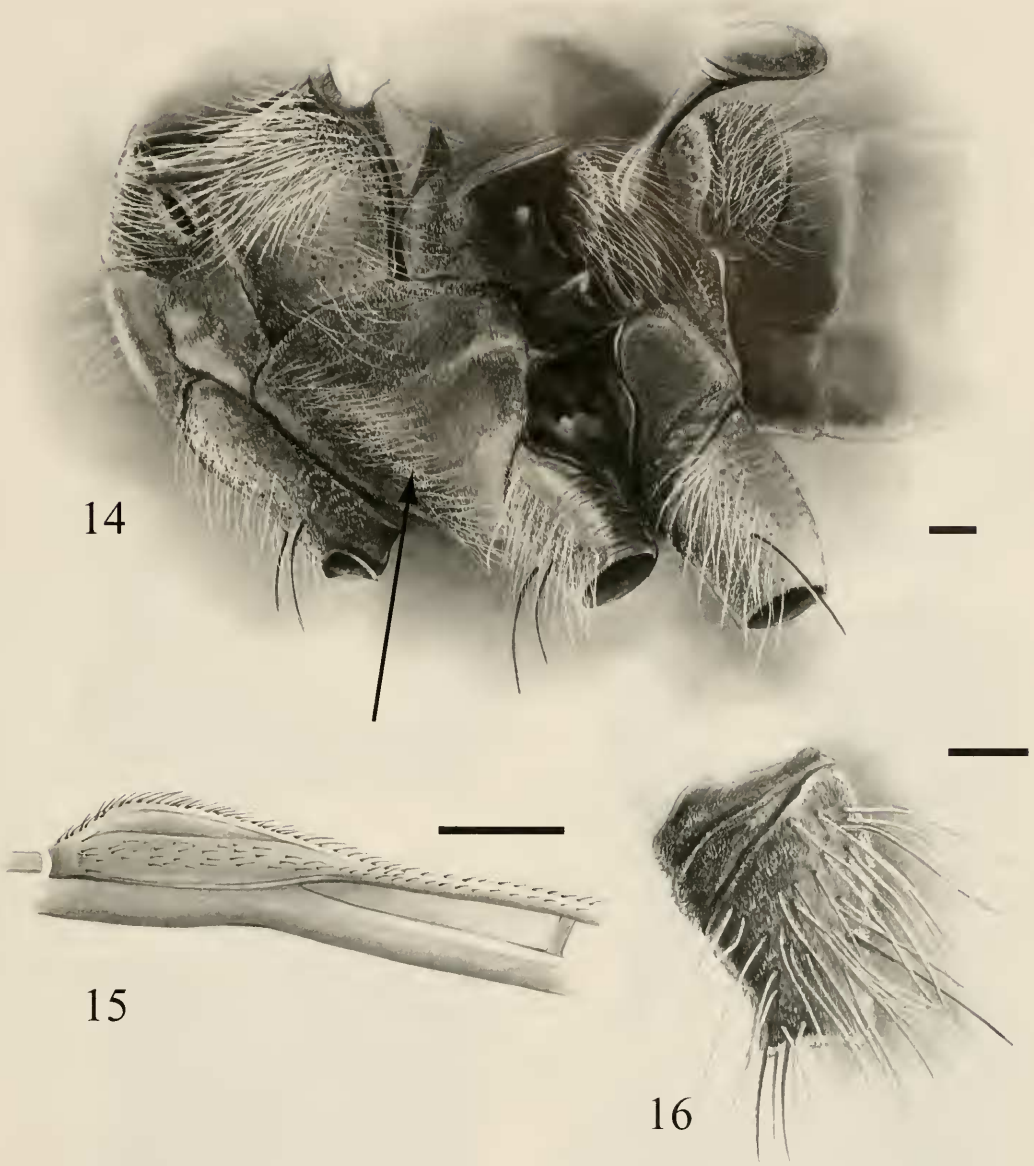
0 normal, not globose
1 globose, bulging

At the antennal insertion, the lower frons bulges slightly in most *Ozodiceromyia* (Fig. 7). As an autapomorphy for *Ozodiceromyia mexicana,* the lower frons is distinctly bulging and globose (Figs. 9–10).

10. Setae of ♂ frons

0 scattered
1 in patches or absent

In many *Ozodiceromyia,* including the outgroup taxon *Ozodiceromyia signatipennis,* the setae on the male frons are scattered (Fig. 11). In the *mexicana*-group and *Ozodiceromyia costalis,* these setae are absent or reduced to small patches located dorsolaterally from the antennal base (Fig. 7).

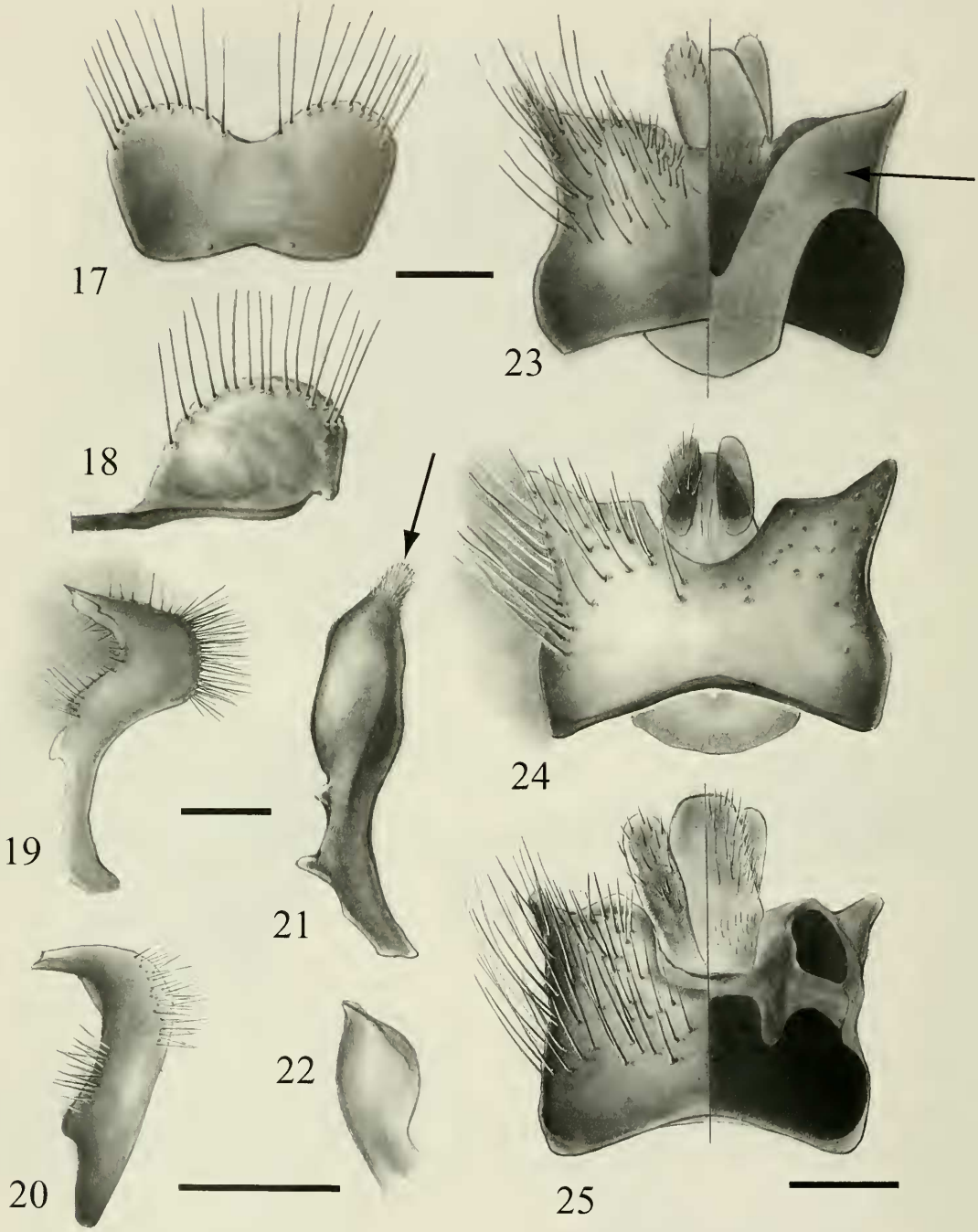


Figs. 14–16. Thorax and associated structures: lateral thorax, ♂, left is anterior (14); basal costal lobe of wing, ♀, left is basal (15); hindcoxa, ♂, left is anterior (16). (14–15) *Ozodiceromyia argentifera* (MEI 037789, 052183); arrow (14) points to katepisternum. (16) *Ozodiceromyia mexicana* (052192). Measure bars, 0.2 mm.

11. Face directly below antenna

0 with full pruinescence
1 shiny, with little or no pruinescence (usually black)

For most *Ozodiceromyia,* the face below the antenna is fully covered with silver pruinescence (Fig. 8). In *Ozodiceromyia costalis* (and several undescribed, putatively related species) and *Ozodiceromyia mexicana,* the face completely lacks pruinescence, or any other vestiture, exposing the black, shiny cuticle (Fig. 9).



Figs. 17–25. ♂ genitalic and pregenitalic structures: 8th sternite (17) and tergite (18); gonostylus (19–20); ventral lobe (21–22); epandrium, split view (left, dorsal; right, ventral) (23, 25), dorsal view (24). (17–19, 23) *Ozodiceromyia argentifera* (MEI 037789); arrow (23) points to subepandrial plate. (20, 22) *Ozodiceromyia signatipennis* (MEI 044750). (21, 25) *Ozodiceromyia mexicana* (MEI 052240); arrow (21) points to pilose, secondary distal lobe. (24) *Ozodiceromyia livdahli* (MEI 038822). Measure bars, 0.2 mm.

Thorax

12. ♂ notal vestiture

0 without decumbent pile
1 with thick decumbent pile

Although decumbent pile on the male notum is present in other members of this genus, and other therevids, its absence is considered plesiomorphic at this level of analysis. The presence of thick, decumbent pile is a synapomorphy for *Ozodiceromyia argentifera* + *Ozodiceromyia livdahli.*

13. Fine, erect setae of ♂ notum

0 some black
1 entirely pale or gold, none black

All taxa studied have fine, erect setae on the male notum. Plesiomorphically, most of these setae are black, although some pale setae may be interspersed. As a synapomorphy for *Ozodiceromyia argentifera* + *Ozodiceromyia livdahli,* all of these fine, erect, notal setae are pale or gold. Note, this does not include the notal macrosetae.

14. Posterolateral surface of hindcoxa

0 lacking pile
1 pilose

Plesiomorphically, the posterolateral surface of the hindcoxa is bare (Fig. 14). As an autapomorphy for *Ozodiceromyia mexicana,* this surface has long, thin pile (Fig. 16). This state is also present in certain other groups within *Ozodiceromyia.*

15. Halter color

0 brown
1 yellow

In most species of *Ozodiceromyia,* the halter is brown. In several groups, including the *mexicana*-group, yellow halter is synapomorphic. The only exception is the brown halter found in *Ozodiceromyia parargentifera,* which is considered an autapomorphy for the species.

16. Wing color

0 clear, or with darkened patches
1 cloudy yellow or orange

Although banded wings are known in *Ozodiceromyia,* clear wings or those with darkened patches along certain wing veins are plesiomorphic at this level of analysis. Only in the *mexicana*-group is the wing entirely cloudy yellow or orange, becoming darkened in the distal third. This is considered an autapomorphy for the *mexicana*-group.

Male Terminalia

17. Parameral sheath texture

0 smooth dorsally
1 with transverse wrinkles dorsally

Plesiomorphically, the parameral sheath of the aedeagus is smooth dorsally (Fig. 32). As an autapomorphy for *Ozodiceromyia mexicana,* the parameral sheath has distinct transverse wrinkles dorsally (Fig. 34).

18. Relative lengths of dorsal and ventral apodemes

0 subequal, or dorsal apodeme longer
1 ventral apodeme longer

The states for this character are described as character 37 in Gaimari and Irwin (2000). The longer ventral apodeme (Fig. 37) is autapomorphic for *Ozodiceromyia parargentifera.*

19. Ventral surface of ventral apodeme

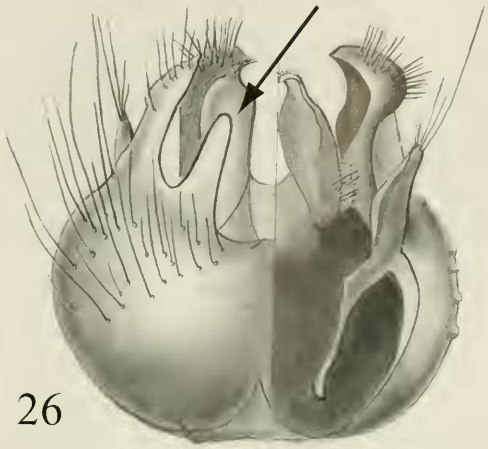
0 without longitudinal keel
1 with longitudinal keel

Most species of *Ozodiceromyia* lack a ventral longitudinal keel on the ventral apodeme. A longitudinal keel is present (Fig. 37) as an autapomorphy for *Ozodiceromyia parargentifera.*

20. Distiphallus length

0 shorter than dorsal apodemes
1 as long or longer than dorsal apodemes

At this level of analysis, having a distiphallus shorter than the dorsal apodemes is considered plesiomorphic (Fig. 38). As an autapomorphy for the *mexicana*-group, the distiphallus is distinctly longer than the dorsal apodemes (Fig. 33).



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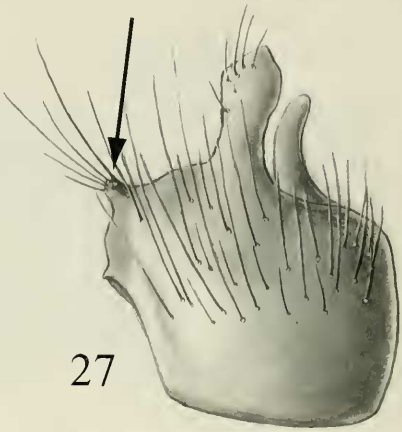

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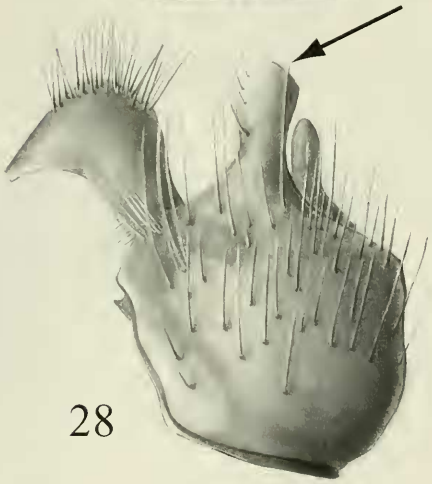

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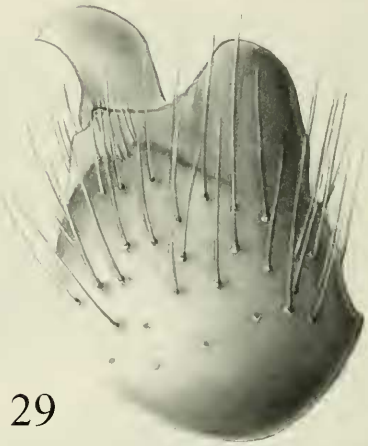

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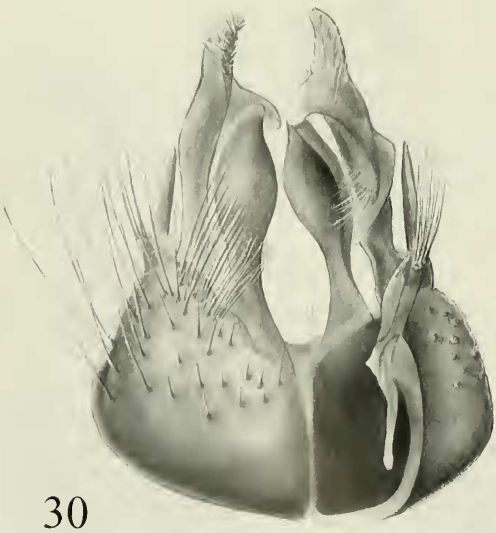

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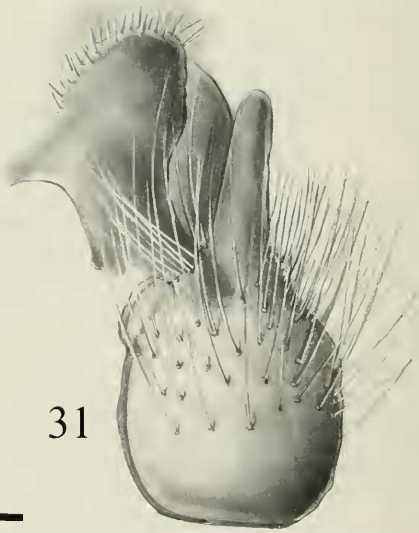


31

21. Dorsal part of basal distiphallus

0 with median groove
1 without median groove, rounded

A median, longitudinal groove is present on the dorsal part of the basal distiphallus in the outgroup taxon *Ozodiceromyia signatipennis.* This groove is lacking, and the distiphallus is entirely rounded above in the *mexicana*-group and *Ozodiceromyia costalis.*

22. Basal portion of distiphallus

0 tapering evenly
1 swollen

Plesiomorphically, the basal portion of the distiphallus is not swollen and tapers gradually and evenly to the apex (Fig. 35). As a synapomorphy for *Ozodiceromyia parargentifera* + *Ozodiceromyia argentifera* + *Ozodiceromyia livdahli,* this part of the distiphallus is distinctly swollen (Figs. 33, 37).

23. Orientation of distiphallus at apex

0 perpendicular to dorsal apodemes
1 parallel with dorsal apodemes

In both outgroup taxa, the distiphallus is perpendicular to the dorsal apodemes throughout, not recurving anteriorly or posteriorly. As a synapomorphy for members of the *mexicana*-group, the distiphallus recurves anteriorly before its apex, becoming parallel with the dorsal apodemes (Figs. 33, 35). As an autapomorphy for *Ozodiceromyia parargentifera,* the distiphallus loses its curve and becomes perpendicular with the dorsal apodemes (Fig. 37), as in state 0.

24. Subepandrial plate attachment to epandrium

0 laterally and posteriorly
1 laterally only

Plesiomorphically, the subepandrial plate is solidly attached to the epandrium both laterally and posterolaterally (Fig. 23). As an autapomorphy for *Ozodiceromyia mexicana,* the subepandrial plate is greatly reduced, and is only attached to the epandrium through a lateral membranous connection (Fig. 25).

25. Posterolateral corners of epandrium

0 held by subepandrial plate
1 held by sclerotized membrane

The posterolateral corners of the epandrium are held together by the subepandrial plate (Fig. 23), plesiomorphically. As an autapomorphy for *Ozodiceromyia mexicana,* the corners are held by a separate, sclerotized membrane (Fig. 25), apparently not associated with the subepandrial plate.

26. Gonocoxal setae color

0 mostly pale
1 all black

Although this is variable throughout *Ozodiceromyia,* pale gonocoxal setae are plesiomorphic at this level of analysis. Under the accelerated transformation character optimization model, presence of all black setae (Fig. 27) is synapomorphic for the clade of *Ozodiceromyia parargentifera* + *Ozodiceromyia argentifera* + *Ozodiceromyia livdahli,* with a subsequent autapomorphic change to pale setae in *Ozodiceromyia livdahli* (Fig. 28)

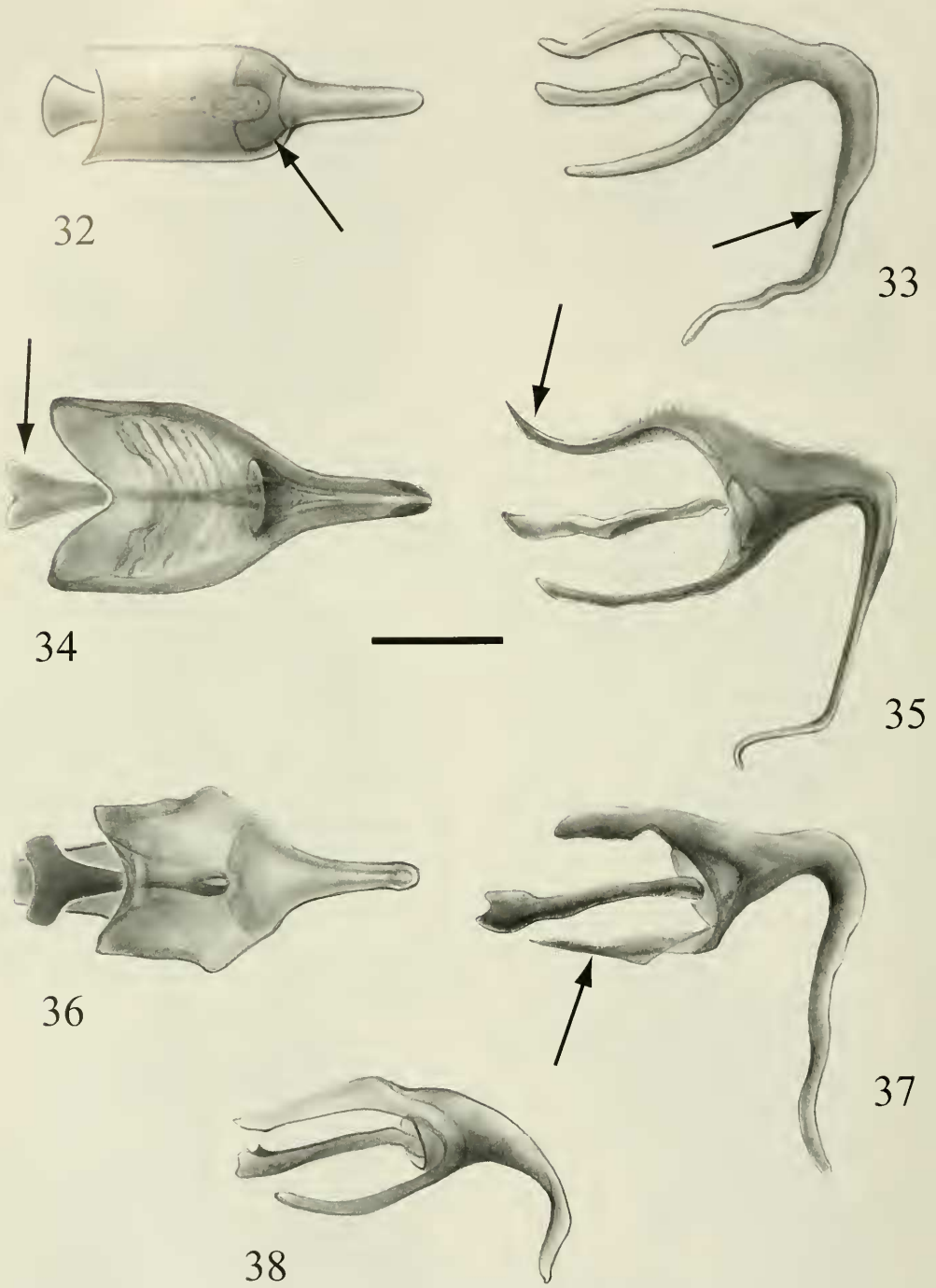
27. Distinct internal keel where gonocoxites fused

0 absent
1 present

At this level of analysis, the lack of a distinct internal keel (visible externally as a groove) where the gonocoxites are fused

←

Figs. 26–31. ♂ gonocoxites and associated structures, split view (left, ventral; right, dorsal) (26, 30), lateral view, gonostylus removed, left is dorsal (27), lateral view, left is dorsal (28–29, 31). (26–27) *Ozodiceromyia argentifera* (MEI 037789); arrow (26) points to ventral gonocoxal process, arrow (27) points to inner gonocoxal process. (28) *Ozodiceromyia livdahli* (MEI 038822); arrow points to outer gonocoxal process. (29) *Ozodiceromyia signatipennis* (MEI 044750). (30–31) *Ozodiceromyia mexicana* (MEI 052240). Measure bars, 0.2 mm.



Figs. 32–38. Aedeagal complex: dorsal view (32, 34, 36); lateral view (33, 35, 37–38). (32–33) *Ozodiceromyia argentifera* (MEI 037789); arrow (32) points to lateral ejaculatory process, arrow (33) points to distiphallus. (34–35) *Ozodiceromyia mexicana* (MEI 052240); arrow (34) points to ejaculatory apodeme, arrow (35) points to dorsal apodeme. (36–37) *Ozodiceromyia parargentifera* (MEI 027017); arrow (37) points to ventral apodeme. (38) *Ozodiceromyia signatipennis* (MEI 044750). Measure bar, 0.2 mm.

(Fig. 26) is plesiomorphic. As an autapomorphy for *Ozodiceromyia mexicana,* this distinct line of fusion is present (Fig. 30).

28. Ventral gonocoxal process

0 absent or only small fold of edge
1 elongated and flanged

Plesiomorphically, the ventral gonocoxal process is absent, or is only a small fold of the edge (Fig. 30). As a synapomorphy for the clade of *Ozodiceromyia parargentifera* + *Ozodiceromyia argentifera* + *Ozodiceromyia livdahli,* the ventral gonocoxal process is present, elongated, and flanged (Fig. 26).

29. Setae of ventral gonocoxal process (including corresponding edge if absent)

0 absent
1 distinctly different from other gonocoxal setae

Plesiomorphically, setae are absent on the ventral gonocoxal process (Fig. 26), or on the corresponding edge if absent. In *Ozodiceromyia mexicana* and *Ozodiceromyia costalis,* the setae are distinctly different from the remaining gonocoxal setae (Fig. 30).

30. Setae of outer gonocoxal process

0 absent
1 present

The outer gonocoxal process is bare of setae (Fig. 31) plesiomorphically. As a synapomorphy for the clade of *Ozodiceromyia parargentifera* + *Ozodiceromyia argentifera* + *Ozodiceromyia livdahli,* there is a small patch of short setae on the dorsolateral portion of the outer gonocoxal process (Fig. 27).

31. Outer and ventral gonocoxal processes

0 fused
1 unfused

The outer and ventral gonocoxal processes are plesiomorphically fused (Fig. 29), as in the outgroup taxon *Ozodiceromyia signatipennis.* These processes are separate and unfused (Figs. 27, 35) in the *mexicana*-group and in *Ozodiceromyia costalis.*

32. Projection on gonocoxal apodeme for articulation with aedeagus

0 absent
1 present

There is no sclerotized connection between the gonocoxal apodeme and the aedeagus in any taxon in this study. *Ozodiceromyia signatipennis* completely lacks any projections on the gonocoxal apodeme. However, in the *mexicana*-group and in *Ozodiceromyia costalis,* there is a medially directed projection of the gonocoxal apodeme (Fig. 30) that provides a site for articulation with the aedeagus.

33. Distal part of ventral lobe

0 bare, or with fine, short pile on outer edge
1 with pilose distal lobe

Most *Ozodiceromyia,* including both outgroup taxa, lack a secondary distal lobe on the ventral lobe (Fig. 22). Only as an autapomorphy for the *mexicana*-group is a finely pilose, secondary lobe present distally on the ventral lobe (Fig. 21).

34. Lobe of gonostylus

0 expanded ventrally into small lobe
1 lobe greatly expanded ventrally

In the more primitive *Ozodiceromyia* (see Gaimari 1998), the gonostylus is strap-like, with no lobe ventrally. More advanced members of the genus have a small lobe on the ventral part of the gonostylus (Fig. 20), which is the plesiomorphic state at this level of analysis. As an autapomorphy for the *mexicana*-group, this lobe is greatly enlarged (Fig. 19).

35. Subapical spur of gonostylus

0 present
1 absent

The states of this character are described as character 56 in Gaimari and Irwin (2000). The subapical spur of the gonostylus is absent in both *Ozodiceromyia*

mexicana and the outgroup taxon *Ozodiceromyia costalis*. Although this character is quite variable in the genus, the change to state 0 appears to be a synapomorphy for the clade of *Ozodiceromyia parargentifera* + *Ozodiceromyia argentifera* + *Ozodiceromyia livdahli*.

Female terminalia

36. Posterior edge of furca

0 rounded
1 with notch or bend

Plesiomorphically, the posterior edge of the furca is rounded normally, with no notches or bends (Fig. 39). As an autapomorphy for *Ozodiceromyia mexicana,* a distinct, anteriorly directed notch is present (Fig. 41).

37. Medioventral edge of posterolateral furca

0 smooth
1 with small process

Plesiomorphically, there are no medially directed pegs on the inner furcal margin (Fig. 39). As an autapomorphy for *Ozodiceromyia mexicana,* there is a small process, or peg, on the inner ventral edge of the furca on the posterolateral margin (Fig. 41).

38. Space between anterior prongs of furca

0 subequal to greatest furcal width
1 distinctly narrower than greatest furcal width

The space between the anterior prongs of the furca is approximately the same width as the greatest furcal width (Fig. 39), plesiomorphically. As an autapomorphy for *Ozodiceromyia parargentifera,* the width between the anterior prongs of the furca is distinctly narrowed (Fig. 40).

39. Posterior part of furcal bulla

0 normal, not indented
1 indented as cavity to house common spermathecal duct

Plesiomorphically, the posterior part of the furcal bulla us rounded normally. As an autapomorphy for the *mexicana*-group, this posterior margin is distinctly indented as a cavity to house the common spermathecal duct (Fig. 39).

40. Basal part of common spermathecal duct

0 normal width, more or less even throughout length
1 distinctly widened, tapering quickly

The basal part of the common spermathecal duct is plesiomorphically of normal width, more or less even throughout its length, only gradually tapering (Fig. 41). As a synapomorphy for the clade of *Ozodiceromyia parargentifera* + *Ozodiceromyia argentifera* + *Ozodiceromyia livdahli,* the base is distinctly enlarged and widened, tapering quickly to normal width (Fig. 39).

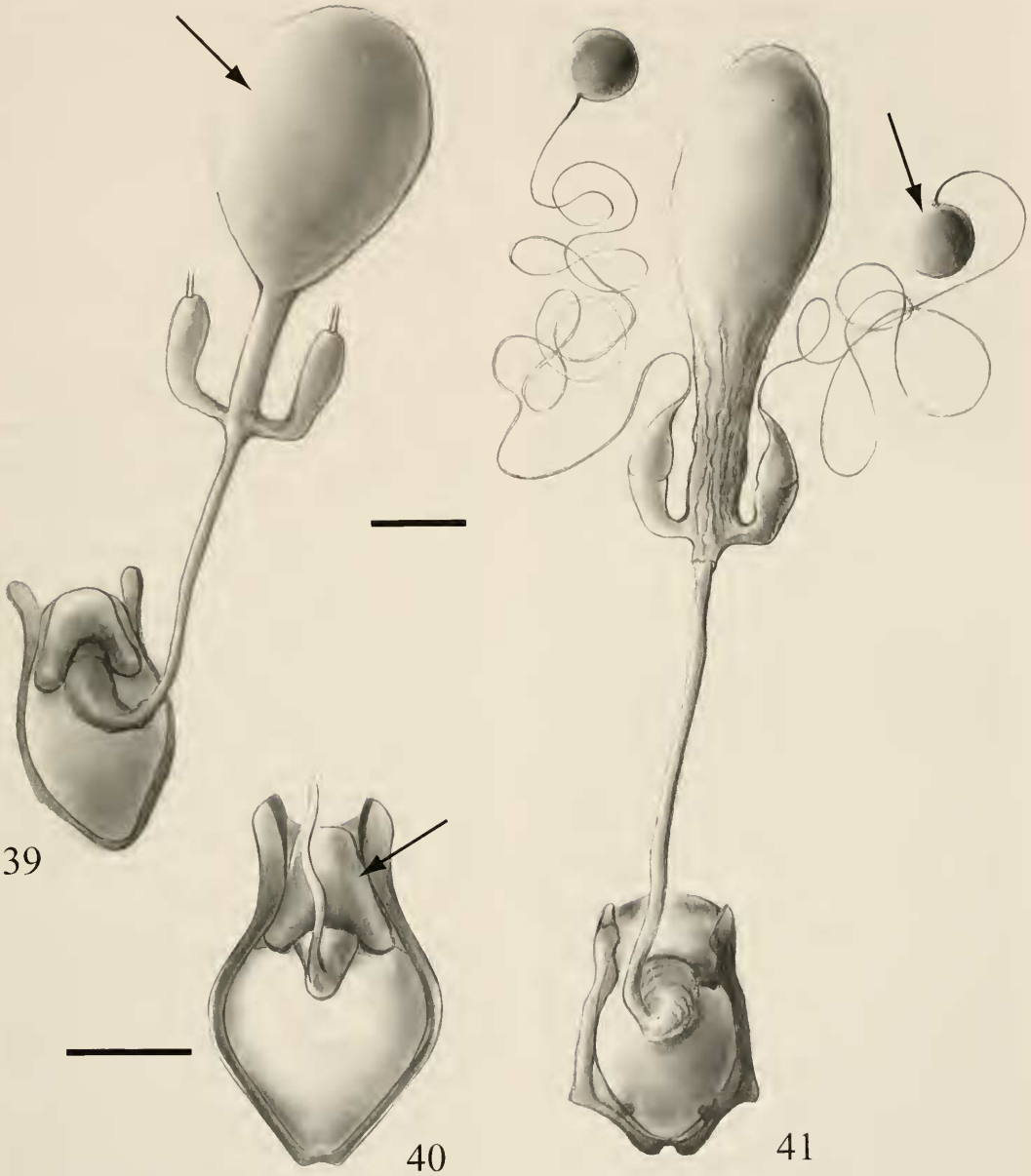
41. Individual spermathecal duct origin

0 from base of central sac
1 from common spermathecal duct

Plesiomorphically, the spermathecal ducts originates from the base of the central sac (Fig. 41). As a synapomorphy for the clade of *Ozodiceromyia parargentifera* + *Ozodiceromyia argentifera* + *Ozodiceromyia livdahli,* the spermathecal ducts originate on the common spermathecal duct, with a short duct then leading to the central sac (Fig. 39).

Results and Discussion

Cladistic analysis.—The analysis produced a single most parsimonious tree (Fig. 5) of length 47, Consistency Index (Kluge and Farris 1969) of 0.87 (0.80 excluding autapomorphies), Retention Index (Farris 1989) of 0.81, and Rescaled Consistency Index (Farris 1989) of 0.71. The topology remained stable through successive weighting (Farris 1969; Carpenter 1988, 1994), implemented by PAUP by reweighting all characters on a base weight of 1,000 by the maximum values of their Rescaled Consistency Indices, leveling out at a single iteration. After this single iteration, the tree statistics above were all 0.97 or higher. Because the expected amount of homoplasy



Figs. 39–41. ♀ reproductive structures: furca (dorsal view) through central sac and basal part of spermathecal ducts (both spermathecal ducts truncated basally) (39); furca (dorsal view) through central sac and spermathecae (41). (39) *Ozodiceromyia argentifera* (MEI 052230); arrow points to central sac. (40) *Ozodiceromyia parargentifera* (MEI 027022); arrow points to furcal bulla. (41) *Ozodiceromyia mexicana* (MEI 070426); arrow points to spermatheca. Measure bars, 0.2 mm.

increases with the number of taxa in a parsimony analysis, the regression equation of Sanderson and Donoghue (1989) was used to calculate the expected value for the Consistency Index. The calculated value of 0.78 for 6 taxa is lower than the value indicated in the current analysis, excluding autapomorphies, so the amount of homoplasy is

less than expected for an analysis with this number of taxa under the 1989 model. The relatively high Retention Index indicates that a high proportion of the potential synapomorphies in the data matrix are present as homologies on the cladogram.

Bremer support (aka, decay analysis) may reflect the robustness of certain elements of the resulting cladograms (Bremer 1988, Donoghue et al. 1992, Källersjö et al. 1992). A decay analysis entails calculating the difference in tree length between the most parsimonious tree and the shortest tree which lacks each nodal group. This reflects how much additional evidence, in the form of characters supporting an alternative grouping, would be necessary to overthrow a clade in the most parsimonious hypothesis. Using AUTODECAY (Eriksson 1997, currently in version 2.9.9) in combination with PAUP, Bremer support indices were calculated for each nodal group in the cladogram. Following Gaimari and Irwin (2000), Bremer support indices were also calculated using the successively reweighted data, and were rescaled per the procedure outlined by Bremer (1994). The resulting Bremer support indices for each node are displayed on the cladogram in Fig. 6. The Bremer support values are an indication of the number of characters in opposition to the current topology that would be necessary to break down the individual nodes of the tree. Justification for excluding perturbation (e.g., bootstrap, jackknife) and permutation (PTP, T-PTP) based methods to assess branch support is provided by Gaimari and Irwin (2000).

Classification.—The internal classification of the Therevidae has only recently begun to receive attention. Not until recently (Irwin and Lyneborg 1981a) was the family formally divided into two subfamilies, Therevinae and Phycinae. More recently, Gaimari and Irwin (2000) defined and proposed a phylogenetic classification for genera of Cyclotelini, including *Ozodiceromyia,* and Gaimari (1998) defined putative species-groups within the genus, including the *mexicana*-group as defined herein.

Table 3. Classification for the species of the *Ozodiceromyia mexicana*-group.

Cyclotelini Gaimari and Irwin, 2000
Ozodiceromyia Bigot, 1890
Ozodiceromyia "*mexicana*-group"
O. mexicana Bigot, 1890
O. parargentifera, n. sp.
O. argentifera (Kröber 1929)
O. livdahli, n. sp.

According to the cladogram, the Bremer support index of 7 additional steps for the clade, and the rescaled Bremer support index of 13 additional steps, the *Ozodiceromyia mexicana*-group appears well supported by autapomorphies. This hypothesis will be most thoroughly tested in the phylogenetic analysis of the entire genus underway. The classification in Table 3 is presented as a phyletic sequence of taxa (Nelson 1969, 1972, 1973) within this small group of *Ozodiceromyia.* The group will be classified within the larger context of the entire genus with the pending revisionary work underway.

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